Data Mining Tools & Languages

Lecturer: Zyryanov Alexander.

Semester: 1 **Duration**: 16 weeks

Workload (h): 144 **Presence** (h + CH): 64 (4) **Self-Study** (h): 80

Contents:

Background and relations to other courses: Elements of statistics and probability theory.

Main topics and learning objectives:

Themes	**Learning objectives**
Tada mining studious	To overview tools of data mining such as Weka and Orange. To solve practice problem in this tools.
R language	To know basics of R language. To use tools for conducting analysis. To overview R infrastructure for Data mining.
Python language	To know basics of Python language. To use tools for conducting analysis. To overview Python infrastructure for Data mining.
CRISP-DM	To know steps of CRISP-DM methodology in data mining.
Visualization and presentation	To know visualization principles. To get familiar with visualization frameworks. To overview tools such as Tableau.

Lecture plan:

1. Data mining solutions overview.
2.Orange classification and regression tools.
3. Orange cauterization tools.
4. Orange associative rules tools.
5. Weka overview and comparison with Orange.
6. Python overview, files, lists, dictionaries, strings.
7. Python, coding, work with csv
8. Python, OOP, exception handling.
9. Python, iterators and generators, functional programming.
10.Python, IPython notebook, numpy, pandas, scikit-learn.
11. R overview, basics of language.
12. R data mining infrastructure, R in comparison with Python.
13. Visualization principles and visualization tools, Tableau.
14. Visualization in Python, mathplotlib.
15.R and python programs speed up.
16. Analytics process overview, CRISP-DM

Assessment:

Formative: 13 practice tasks, in interaction with lecturer and tutor during learning period. On site, skype, email are preferable.

Summative:

Number and Type; Connection to Course	**Duration**	**Part of final mark in %**
Pass Test (13 tasks)	90 min	100%

Learning outcomes:

Academic: The students have insight into data mining software, languages and its application.

Prerequisites for Credit Points: The credit points will be granted when the course has been successfully completed, i.e. all parts of the examination are passed.