<table>
<thead>
<tr>
<th>Study profile</th>
<th>academic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course type</td>
<td>obligatory</td>
</tr>
<tr>
<td>Forms and number of hours of tuition</td>
<td>L</td>
</tr>
<tr>
<td></td>
<td>30</td>
</tr>
<tr>
<td>No. of ECTS credits</td>
<td>6</td>
</tr>
</tbody>
</table>

**Entry requirements**
Transfer of knowledge related to the use of recommenders systems application sites. Review of existing web-based systems using data similarity as a method of analysis. acquaintance with the techniques used in recommender systems: user-based and item-based.

**Course content**
**Lecture:**
1. Overview of recommenders systems on the Internet.
2. Types of recommenders systems: non-personalised, collaborative filtering, content-based and knowledge-based.
3. CF systems: user-based and item-based. Similarity measure.
4. Content-based systems. Application of VSM.
5. Examples of content-based systems, SRC.
7. Problems in the field of recommenders systems.
8. Application of grouping algorithms in order to improve time efficiency in recommender systems.
9. Examples of systems based on the grouping. RecTree, IBCF, CIBCF.
10. Summary.

**Project:**
1. Analysis of recommender systems working in real environment
2. Recommender systems’ frameworks (collaborative filtering and content-based) for own project implementation

**Teaching methods**
Informative lecture, case method, brainstorming, programming, project method, simulation,

**Assessment method**
Written test, project

**Symbol of learning outcome**
<table>
<thead>
<tr>
<th>No.</th>
<th>Learning outcomes</th>
<th>Reference to the learning outcomes for the field of study</th>
</tr>
</thead>
<tbody>
<tr>
<td>LO1</td>
<td>tasks are completed in time</td>
<td>K_U06</td>
</tr>
<tr>
<td>LO2</td>
<td>knows types of personalisation systems and possibilities of their application</td>
<td>K_W06, K_U01</td>
</tr>
<tr>
<td>LO3</td>
<td>knows algorithms to apply in a particular groups of personalisation systems and the way how they work</td>
<td>K_W03, K_U02</td>
</tr>
<tr>
<td>LO4</td>
<td>is able to match an appropriate type of recommender system with a particular problem</td>
<td>K_U10</td>
</tr>
</tbody>
</table>

**Methods of assessing the learning outcomes**
- project’s evaluation
- project, written test
- project, written test
- project

**Student workload (in hours)**
- Attendance at lectures - 15x1h
- Attendance at project classes - 15x2h
- Preparation for classes -
- Implementation of projects -
- Preparation for test -
- Participation in student-teacher sessions -

**Calculation**
<table>
<thead>
<tr>
<th>No. of hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>20</td>
</tr>
<tr>
<td>50</td>
</tr>
<tr>
<td>30</td>
</tr>
<tr>
<td>5</td>
</tr>
<tr>
<td>TOTAL:</td>
</tr>
<tr>
<td>150</td>
</tr>
</tbody>
</table>

**Quantitative indicators**
- Student workload - activities that require direct teacher participation
  - 50
  - 2.0
- Student workload - practical activities
  - 100
  - 4.0

**Basic references**
2. https://mahout.apache.org/

**Supplementary references**
https://towardsdatascience.com/introduction-to-recommender-systems-6c66cf15ada

**Organisational unit conducting the course**
Department of Information Systems and Computer Networks

**Author of the programme**
dr inż. Urszula Kużelewska

**Date of issuing the programme**
Feb. 17, 2022