Bialystok University of Technology									
Field of study	**Computer Science**							**Degree level and programme type**	**Engineer's degree full-time programme**
Specialization/ diploma path	**---**							**Study profile**	academic
Course name	**Recommender Systems**							**Course code**	**FCS-00086**
								Course type	obligatory
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	**Semester**	3
	30				30			**No. of ECTS credits**	**6**

Entry requirements	
Course objectives	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. Acquainttance 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. 6. Evaluation of recommender systems. Measures of precision, recall, MAE, RMSE. 7. Problems in the field of recommenders systems. 8. Application of groupping algorithms in order to improve time efficiency in recommender systems. 9. Examples of systems based on the groupping. RecTree, IBCF, CBIBCF. 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 3. Similarity calculation and neighbourhood identification. 4. Recommender systems' evaluation with assessment indices.
Teaching methods	informative lecture, case method, brainstorming, programming, project method, simulation,
Assessment method	Written test, project

Symbol of learning outcome	**Learning outcomes**	**Reference to the learning outcomes for the field of study**
LO1	tasks are completed in time	K_U06
LO2	knows types of personalisation systems and possibilities of their application	K_W06 K_U01
LO3	knows algorithms to apply in a particular groups of personalisation systems and the way how they work	K_W03 K_U02
LO4	is able to match an appropriate type of recommender system with a particular problem	K_U10

Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	project's evaluation	Sw
LO2	project, written test	L, Sw
LO3	project, written test	L, Sw
LO4	project	Sw

Student workload (in hours)	**No. of hours**
1 - Attendance at lectures - 15x1h	15
2 - Attendance at project classes - 15x2h	30
3 - Preparation for classes -	20
4 - Implementation of projects -	50
5 - Preparation for test -	30
6 - Participation in student-teacher sessions -	5
TOTAL:	**150**

Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	50 (6)+(1)+(2)	2.0
Student workload – practical activities	100 (4)+(2)+(3)	4.0

Basic references	1. S. Owen, R. Anil, T. Dunning, E. Friedman, Mahout in Action, Manning Publications, 2011 - free electronic copy 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	**Date of issuing the programme**
Author of the programme	dr inż. Urszula Kużelewska	Feb. 17, 2022

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW – field work,S – seminar