Bialystok University of Technology, Faculty of Mechanical Engineering									
Field of study	*Mechatronics*							**Degree level and programme type**	*first-cycle (BSc, Eng) full-time studies*
Specialization/ diploma path	*Common course*							**Study profile**	*academic*
Course name	*Introduction to computer science*							**Course code**	*IS-FME-00176W*
								Course type	
Forms and number of hours of tuition	**L**	**C**	**LC**	**P**	**SW**	**FW**	**S**	**Semester**	*winter*
	30			*30*				**No. of ECTS credits**	*5*
Entry requirements	-								
Course objectives	*The main objective of the course is getting students acquainted with modern computer science in a broad range. Sufficient understanding of the presented issues will allow students to function more easily in the technical society. The main emphasis is put on providing theoretical and practical foundations of algorithm and software development, which aims at preparing students to further expand their knowledge in this area. In addition, students will become familiar with the practical application of utility software, i.e. word processors and spreadsheets.*								
Course content	*Lecture: Computer architecture (data storage, data handling, the concept of stored programmes). Algorithms (algorithm design and analysis, algorithms on numbers, sorting and 'divide-and-conquer' algorithms, probabilistic analysis and randomised algorithms, and graph algorithms). Software (programming languages, software engineering). Data organisation (data structures, file structures, databases). Algorithmic machines (artificial intelligence, theory of computation). Computer networks. Project classes: Practical application of the Latex word processor. Fundamentals of programming in a selected programming environment. Practical application of a spreadsheet.*								
Teaching methods	*Information and problem lecture; Project classes*								
Assessment method	*Lecture: examination; Project classes: evaluation of: students' projects, their ongoing work progress, participation in discussions and students' activity during classes*								

Symbol of learning outcome	**Learning outcomes Students who successfully complete the course:**	**Reference to the learning outcomes for the field of study**
LO1	*have basic knowledge of modern computer science,*	*MK1_W04, MK1_W05*
LO2	*have basic knowledge of designing and analysing algorithms, of types of algorithms, and of programming languages,*	*MK1_W04, MK1_W05*
LO3	*can create simple applications in the specified programming environment,*	*MK1_U05, MK1_U10*
LO4	*can use word processors and spreadsheets.*	*MK1_U03, MK1_U10*

Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	*Lecture: two tests*	*L*
LO2	*Lecture: two tests*	*L*
LO3	*Project classes: evaluation of: students' projects, their ongoing work progress, participation in discussions and students' activity during classes*	*P*
LO4	*Project classes: evaluation of: students' projects, their ongoing work progress, participation in discussions and students' activity during classes*	*P*

Student workload (in hours)	**No. of hours**
Participation in lectures	*30*
Participation in project classes	*30*
Preparation for passing the lecture	*19*

Calculation	*Preparation for project assignments*	*24*
	Completion of project assignments (including preparation of presentations)	*10*
	Preparation for passing project assignments	*8*
	Participation in consultations	*4*
	TOTAL:	*125*

Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	*64*	*2.6*
Student workload – practical activities	*74*	*3*

Basic references	*1. Brookshear J.G., Informatyka w ogólnym zarysie, WNT, 2003.* *2. Cormen T.H., Leiserson C.E. , Rivest R.L., Clifford S., Wprowadzenie do algorytmów, PWN, 2018 .* *3. Harel D., Yishai F., Rzecz o istocie informatyki - algorytmika, WNT, 2008.* *4. Bradford R., Podstawy sieci komputerowych, WKŁ, 2009.* *5. Przybylski B., Lua i LaTeX. Dynamiczne tworzenie dokumentów, PWN, 2017.*
Supplementary references	*1. Wirth N., Algorytmy + struktury danych = programy, WNT, 2004.* *2. Diller A., LaTeX. Wiersz po wierszu, Wiley (Helion), 2001.* *3. Borkowski M., Przybylski B., Książka kucharska LATEX, Polskie Towarzystwo Matematyczne, 2015.* *4. Smogur Z., Excel w zastosowaniach inżynieryjnych, Helion, 2008.*

Organisational unit conducting the course	*Department of Mechanics and Applied Computer Science*	**Date of issuing the programme**
Author of the programme	*Michał Kuciej, DSc, PhD, Eng*	*24.04.2019*

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