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	**Operating Systems**							**Course code**	**FCS-00017**
								Course type	obligatory
Forms and number of hours of tuition	L	C	LC	P	SW	FW	S	**Semester**	2
	30				30			**No. of ECTS credits**	**6**
Entry requirements	Computer Organization and Architecture (FCS-00011), Programming Basics (FCS-00031),								
Course objectives	Skills for solving problems requiring synchronization of threads (or processes). The knowledge of an operating system fundamentals. Skills for programming using an operating system API.								
Course content	Lecture: Introduction. Elements of a computer system architecture. Processes and threads. Concurrency. Fundamental synchronization problems. Semaphores and monitors. Deadlocks and starvation. CPU and disk scheduling. Memory management and virtual memory. Protection and Security. File systems. Operating systems for parallel and distributed computers. Real-time and multimedia operating systems. Workshop: System programming with Linux API. Concurrent programming with the POSIX Threads standard.								
Teaching methods	informative lecture, programming,								
Assessment method	The lecture - a written examination, The specialistic workshop - four tests and two software projects.								

Symbol of learning outcome	**Learning outcomes**	**Reference to the learning outcomes for the field of study**
LO1	knows the operating system fundamentals	K_W03
LO2	can solve basic synchronization problems using semaphores and monitors	K_U05
LO3	can program using an operating system API	K_U05
LO4	can experimentally evaluate the efficiency of a computer system	K_U06
LO5	can install and configure an operating system	K_U05

Symbol of learning outcome	**Methods of assessing the learning outcomes**	**Type of tuition during which the outcome is assessed**
LO1	Written exam, about 30 questions	L
LO2	Presentation and defense of a software project, 2 tests	Sw
LO3	Presentation and defense of a software project, 2 tests	Sw
LO4	Presentation and defense of a software project, 2 tests	Sw
LO5	Homework	Sw

Student workload (in hours)	**No. of hours**
1 - Listening to lectures - 15x2h	30
2 - Participation in the specialistic workshop - 15x2h	30
3 - Preparation of software projects -	50
4 - Preparation for examination -	20
5 - Examination -	2
6 - Preparation for specialistic workshop -	15
7 - Participation in consulting with teacher -	3
TOTAL:	**150**

Quantitative indicators	**HOURS**	**No. of ECTS credits**
Student workload – activities that require direct teacher participation	65 (7)+(1)+(2)+(5)	2.6
Student workload – practical activities	95 (3)+(2)+(6)	3.8

Basic references	1. A. Silberschatz, P. B. Galvin,G. Gagne, Operating Systems Concepts , 2013. 2. A. S. Tanenbaum, Modern Operating Systems, 2013. 3. W. Stallings, Operating Systems: Internals and Design Principles, 2014.
Supplementary references	1. R. Love, Linux System Programming: Talking Directly to the Kernel and C Library, 2013.
Organisational unit conducting the course	Software Department — **Date of issuing the programme**
Author of the programme	dr inż. Wojciech Kwedlo,mgr inż. Daniel Reska — Feb. 17, 2022

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