

Code .....

Course item: .....

**1. INFORMATION ABOUT THE COURSE****A. Basic information**

Name of course	<b>Basics of Operating Systems</b>
Study level	<i>First degree</i>
Unit running the study programme	<i>Faculty of Telecommunication, Computer Science and Electrical Engineering</i>
Study programme	<i>Data communications</i>
Speciality	
Name of teacher (s) and his academic degree	<i>Beata Marciniak, PhD</i>
Introductory courses	<i>Basis of algorithms</i>
Prerequisites	

**B. Semester/week schedule of classes**

Semester	Lectures	Classes	Laboratories	Project	Seminars	Field exercises	ECTS
winter	15		15				3

**2. EFFECTS OF EDUCATION** (acc. to National Qualifications Framework)

Knowledge	<i>On successful completion of the course student is supposed to: define the basic structure of the operating system, describe the basic functions and features of operating systems, identify one-purpose and multi-tasking systems, as well as single-threaded and multithreaded, will be able to define concurrent processes and characterize the principle of expropriation of processes, will be able to explain the memory management and its organization and addressing. Able to recognize the memory allocation algorithms. Will be able to find blocks of management input / output devices and describe the character and block devices and access methods</i>
Skills	<i>on successful completion of the course student is supposed to: analyse the performance multithreaded operating system, will be able to resolve issues pertaining to the concurrency of processes will be able to formulate a graph of the processes and formulate a solution for resource allocation graph</i>
Competences	<i>on successful completion of the course student is supposed to: actively participate in the team working on developing a new operating system will be able to independently develop new algorithms for process control as well as collaborate with a team developing new methods of operating systems</i>

**3. TEACHING METHODS**

<i>multimedia lecture, multimedia laboratory</i>
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**4. METHODS OF EXAMINATION**

<i>written exam, project on the end of lab</i>
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**5. SCOPE**

Lectures	<i>Introduction, history of the development of operating systems, the basic structure of the operating system. Tasks and properties of operating systems. The structures of computer systems and operating systems. Operating system as the users work environment. Character and graphical user interface. Single and multi-purpose systems. Multiuser systems. Distributed systems. A layered model of the operating system. The kernel of the system:</i>
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	<i>structure and function. File management, file system organization.</i>
Laboratories	<i>Implementation of the various mechanisms of memory access, the implementation of various projects. Implementation of algorithms for synchronization of threads. In some implementations will be used bash, most common unix/linux shell. Learning to write scripts using the bash shell and using scripts to manage the operating system.</i>

## 6. LITERATURE

Basic literature	<ol style="list-style-type: none"> <li>1. Silberschatz A., Galvin P. B., Gagne G., 2009, Operating systems concepts. Eight edition. John Wiley &amp; Sons,</li> <li>2. Stallings W., 2018, Operating Systems, Internals and Design Principles Ninth Edition Global Edition, Pearson</li> <li>3. W. Richard Stevens, Bill Fenner, Andrew M. Rudoff, 2003, UNIX Network Programming. 2. Interprocess Communications, Third Edition, Addison-Wesley Professional Computing,</li> <li>4. Tanenbaum A.S, Bos H., 2015, Modern operating systems, 4<sup>th</sup> edition, Pearson.</li> </ol>
Supplementary literature	<p><i>Steve Parker, 2011, Shell Scripting, Expert Recipes for Linux, Bash and more, Wrox</i></p> <p><i>Richard Blum, Christine Bresnahan, 2011, Linux Command Line and Shell Scripting Bible, 2nd Edition, Wiley</i></p>