

1.3. Module/ course form

To be completed by Course Team	Module name : Operating systems					Module code:	
	Course name: Operating systems I					Course code:	
	Faculty: Institute of Applied Informatics						
	Field of study: Informatics						
	Mode of study : Full-time		Learning profile: practical			Speciality:	
	Year/ semester: 1/1		Module/ course status: obligatory		Module/ course language: Polish		
	Type of classes	lecture	lessons	lab	project	tutorial	other (please specify)
	Course load	30		30			

Module/ course coordinator	Dr. eng. Jerzy Skurczyński
Lecturer	Dr. eng. Jerzy Skurczyński
Module/ course objectives	Elementary knowledge of internals of operating systems, working knowledge of text commands and graphical user interface of Unix/Linux systems. Basic informations on administration of those systems.
Entry requirements	Basic ability to use computer equipment

LEARNING OUTCOME		
No	LEARNING OUTCOME DESCRIPTION	Learning outcome reference
1	Know the role of operating system as the software managing computer resources	K_W05, K_W12
2	Understand the functions of main operating system modules	K_W05, K_W12
3	Know rules and standards concerning access rights to file system objects	K_W16
4	Can use basic tool programs in text mode and graphic mode in order to configurate and administrate Unix operating system	K_U13
5	Ensure security of system users and resources	K_U10
6	Can administrate multi-user systems and consistently allocate system resources to users	K_K03

CURRICULUM CONTENTS

Lecture

Purposes and history of development of operating systems. General classification and dependence on computer equipment. Mechanisms of protection.

System functions as basic building blocks of operating systems. Command interpreters and graphical user interfaces.

Managing processes. The state diagram of a process, priorities and queues. Mechanisms of synchronization and interprocess communication. Notions of deadlock and starvation.

Managing memory. Physical and virtual address space. Segmentation, paging and paged segmentation. Realization of virtual memory based on a swap space on a disk.

Organization of file systems. Carriers of external memory, partitions (logical disks). Ordinary and special files, directories, links. Physical realization of file systems (organization of disk blocks).

General architecture of Unix systems, layer organization. Basic kernel structures. Users, sessions and processes. The role of the system administrator. Access to files in Unix systems, owners and access permissions. Overview on basic text commands.

Tutorial

The aim of the laboratory is acquainting students with basic tools offered by Unix/Linux command interpreters and graphical environments. Basically, students will work with a shared server accessed via a local computer network, but they also will work with local (individual) operating systems of their workstations.

As a part of this course, Fundamental of Unix teaching unit is exposed (based on Solaris 10 operating system).

Topics:

Unix environment; access to the system and the graphical user interface; CDE applications; access to files and directories; text editors; administrative tools; protection of the system; backups; managing memory; Unix in a computer network; personalization of environment.

Basic literature	<ol style="list-style-type: none"> 1. A. Silberschatz et al., Operating Systems Concepts, Addison-Wesley, 2003 2. A. S. Tanenbaum, Modern Operating Systems, Pearson Education, Inc., 2008
Additional literature	<ol style="list-style-type: none"> 1. M. Bach, The Design of the UNIX© Operating System, Prentice Hall, 1986 2. D. Bovet, M. Cesati, Understanding the Linux kernel, O'Reilly and Associates, 2001

Teaching methods	<ol style="list-style-type: none"> 1. Lectures: multimedial presentation 2. Laboratory: planning and performing experiments
Assessment method	Learning outcome number
Final examination	1, 2, 3
Classtests, quizzes, sets of laboratory tasks	3, 4, 5, 6
Form and terms of an exam	<p>Lecture - a single choice test</p> <p>Laboratory - at least two classtests</p>

STUDENT WORKLOAD

	Number of hours
Participation in lectures	30
Independent study of lecture topics	10
Participation in tutorials, labs, projects and seminars	30

Independent preparation for tutorials*	40
Preparation of projects/essays/etc.*	
Preparation/ independent study for exams	10
Participation during consultation hours	5
Other	2
TOTAL student workload in hours	127
Number of ECTS credit per course unit	5
Number of ECTS credit associated with practical classes	70 2,8 ECTS
Number of ECTS for classes that require direct participation of professors	67 2,7 ECTS