FACULTY Chemistry

SUBJECT CARD

Name of subject in Polish: Sieci i stacje robocze z systemem unix
Name of subject in English: Networks and workstations with unix system
Main field of study (if applicable): Biosciences
Specialization (if applicable): Bioinformatics
Profile: academic / practical*
Level and form of studies: 2nd level, full-time
Kind of subject: obligatory
Subject code W03BSS-SM2003L
Group of courses NO

	Lecture	Classes	Laboratory	Project	Seminar
Number of hours of organized classes in University (ZZU)			30		
Number of hours of total student workload (CNPS)			50		
Form of crediting (Examination / crediting with grade)			crediting with grade		
For group of courses mark (X) final course					
Number of ECTS points			2		
including number of ECTS points for practical classes (P)			2		
including number of ECTS points corresponding to classes that require direct participation of lecturers and other academics (BU)			1,4		

*delete as applicable

 PREREQUISITES RELATING TO KNOWLEDGE, SKILLS AND OTHER COMPETENCES
1. English - basic level
2. Basic computer skills

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SUBJECT OBJECTIVES
C1 Learning the mechanisms of unix system, and rules of computer network based on the internet protocol
C2 Developing skills for using unix systems at unassisted administration level

SUBJECT EDUCATIONAL EFFECTS
relating to skills:
PEU_U01 Student can run programs from the command line, to perform various file
	operations, and use a text editor
PEU_U02 Student can use documentation for programs, available in unix system
PEU_U03 Student can write an inittab file and simple scripts responsible for initial system
	configuration, check the consistency of a filesystem and attach it to the directory tree
PEU_U04 Student can add and remove user accounts, change passwords and assign users to
	groups, can write session scripts (bash shell)
PEU_U05 Student can assign the network address to network interface, build the routing table,
	create local list of address-name relationships and prepare the system for using the DNS
	service

PEU_U06 Student can use network services of remote terminal, copying files between systems and electronic mail, can make them available for remote users and limit this remote access to specific addresses.
PEU_U07 Student can run local and remote graphical applications in the X window system

PROGRAMME CONTENT	

Laboratory		Number of hours
Lab 1	Programs and processes. Parent and child processes, system mechanisms for running programs and process termination. Signals. User's and group's identifiers - introduction of mechanisms regulating access rights to various system resources.	2
Lab 2	Files and file types: normal, directories, special (character and block devices), files representing communication channels (sockets and named pipes). Normal pipes and their similarity to files. The notion of a filesystem, hard and symbolic links. Review of programs for various file operations, including short introduction to the vi editor.	2
Lab 3	Running the linux kernel under control of the QEMU emulator. Creation of a file representing hard disk, partitioning and creation of filesystem. Archives created with the tar program. Installation of minimal set of programs, needed for running the system.	2
Lab 4	Duties of the program running with process identifier equal to 1. Configuration of the init program (implementation: sysvinit) - the inittab file. Review of tasks performed at the system's initialization stage.	2
Lab 5	Checking of filesystems' consistency and attaching filesystems to the directory tree. Mount and umount programs, the /etc/fstab file. Shared libraries.	2
Lab 6	User accounts - entries in the /etc/passwd file, relationship of names with user identifiers, home directories, encryption and storing of passwords. System and personal session scripts. Creation of groups (the /etc/group file). Programs: su and newgrp.	2
Lab 7	IP address, address' class, structure of an address within given network segment (network mask). Assignement of IP address to the network interface, with the ifconfig program. The loopback interface. Creation of the routing table with the route program.	2
Lab 8	Internet names, name-address relationship. Methods of translating names to addresses and addresses to names: local list in the /etc/hosts file and the DNS network service.	2
Lab 9	TCP and UDP transport protocols. The notion of network socket. Assignement of network services to port numbers (/etc/services file). Rules of making services available by the inetd program.	2
Lab 10	Limiting remote access to network services – mechanisms and configuration of the TCP wrappers software (tcpd program and library code) by access control lists in /etc/hosts.allow and /etc/hosts.deny files.	2
Lab 11	Working in a remote system - services of remote terminal (telnet and ssh) and file transfer (ftp, scp, sftp). Reasons for using encrypted communication channels.	2

Lab 12	Electronic mail - MTA and MUA programs, running an MTA program (smail) and using the mutt mail client (MUA). Basic rules for securing the mail server (MTA).	2
Lab 13	The WWW server - basic configuration of the boa program, creation of simplest WWW pages in the HTML language. Text WWW browser - lynx.	2
Lab 14	The X window system - graphical environment with client-server architecture.	2
Lab 15	Crediting	2
	Total hours	30

TEACHING TOOLS USED

N1. Demonstration
N2. Practical exercises, under teacher's control
N3. Practical exercises , with a simple problem to be solved single-handedly by the student

EVALUATION OF SUBJECT EDUCATIONAL EFFECTS ACHIEVEMENT

Evaluation (F – forming (during semester), P – concluding (at semester end)	Educational effect number	Way of evaluating educational effect achievement
F1	PEU_U01-U07	practical exercises (up to 25 points)
P1	PEU_U02-U06	written test (up to 75 points)
F2	PEU_U02-U06	outstanding knowledge or skills (up to 10 points)

C=F1+P1+F2
50 <= C < 60 3.0
60 <= C < 70 3.5
70 <= C < 80 4.0
80 <= C < 90 4.5
90 <= C < 100 5.0
C >= 100   5.5

PRIMARY AND SECONDARY LITERATURE

PRIMARY LITERATURE:

[1] Aeleen Frisch, UNIX: administracja systemu, O'Reilly & Associates, wydawnictwo RM, Warszawa 1997

SECONDARY LITERATURE:

[1] Craig Hunt, TCP/IP : administracja sieci. wydawnictwo RM, Warszawa 2003

SUBJECT SUPERVISOR (NAME AND SURNAME, E-MAIL ADDRESS)
dr hab. inżż. Krzysztof Strasburger, e-mail: krzysztof.strasburger@pwr.edu.pl, strasbur@chkw386.ch.pwr.wroc.pl