



COURSE DESCRIPTION

1. Program Information

1.1 University	University “Alexandru Ioan Cuza” of Iași
1.2 Faculty	Faculty of Computer Science
1.3 Department	Department of Computer Science
1.4 Study Domain	Computer Science
1.5 Study Cycle	Bachelor's degree
1.6 Study Program / Qualification	Computer Science/ B.Sc. degree in Computer Science

2. Course Information

2.1 Course Name	Operating Systems						
2.2 Course Teacher	Lecturer Cristian Vidrașcu, PhD						
2.3 Seminary Teacher	Lecturer Cristian Vidrașcu, PhD						
2.4 Study Year	1	2.5 Semester	2	2.6 Evaluation	M	2.7 Course Status*	OB

* OB – Compulsory / OP – Optional

3. Total estimated hours (hours per semester and didactic activities)

3.1 Hours per week	2	in which: 3.2 course	2	3.3 seminary/laboratory	2
3.4 Hours in curriculum	56	in which: 3.5 course	28	3.6 seminary/laboratory	28
Time Distribution					hours
Manual study, Course support, Bibliography, and others					30
Supplementary Documentation in library, in electronic forums, and on the field					20
Seminaries/laboratories preparation, homeworks, reports, portfolios and essays					30
Tutoring					-
Evaluation					4
Other activities					10
3.7 Total hours individual study					80
3.8 Total hours per semester					150
3.9 Credits					5

4. Preconditions (if necessary)

4.1 Of Curriculum	Computer architecture and operating systems, Programming (C language)
4.2 Of Skills	Specific skills acquired in 4.1

5. Conditions (if necessary)

5.1 For Course Operation	--
5.2 For Seminary/Laboratory Operation	--



6. Specific Skills Acquired

Professional Skills	<p>C1. The description of concepts and basic models used in the design and implementation of operating systems.</p> <p>C2. The identification and explanation of the basic architecture for the organization and management of systems.</p> <p>C3. The use of mathematical and computer science models and tools for solving some specific operating systems problems.</p> <p>C4. The analysis of models used in the study of operating systems.</p> <p>C5. The development of software components for applications in operating systems.</p>
Transversal Skills	<p>CT1. The efficient conduct of work activities, showing responsible attitudes toward the scientific and teaching domain, for the creative exploitation of their potential, with respect for the principles and rules of professional ethics.</p>

7. Course Objectives (from the grid of specific skills acquired)

7.1 General Objectives	<ol style="list-style-type: none">1. Acquiring knowledge about operating systems, on techniques used for the design and implementation of them.2. Learning abilities for parallel processing and for using the UNIX/Linux operating system.
7.2 Specific Objectives	<p>On successful completion of this subject, students will be able to:</p> <ul style="list-style-type: none">• Explain the basic concepts related to the operating systems.• Describe an operating system architecture, with its main components.• Analyse the algorithms that are used by an operating system for resource management.• Use the text user interface provided by the UNIX/Linux operating system and the parallel processing techniques.• Design software applications that use the services provided by an UNIX/Linux operating system.



8. General Description

8.1	Course	Teaching Methods	Observations (hours and bibliographic references)
1.	The basic concepts of operating systems	Exposure (lecture with illustrations and applications, explanation) using Powerpoint presentations and demonstrations at the blackboard.	2
2.	Structure, components and services. The kernel	Idem	2
3.	Process management (Part I)	Idem	2
4.	Process management (Part II)	Idem	2
5.	Process synchronization (Part I)	Idem	2
6.	Process synchronization (Part II)	Idem	2
7.	Inter-process communication and deadlock	Idem	2
8.	Recap	-	-
9.	Memory management (Part I)	Idem	2
10.	Memory management (Part II)	Idem	2
11.	Memory management (Part III)	Idem	2
12.	Information management	Idem	2
13.	Managing storage peripherals	Idem	2
14.	Distributed systems	Idem	2

Bibliography

Main references:

- A.Silberschatz et al. : *Operating System Concepts (8th edition)*, John Wiley & Sons, 2008.

Supplementary references:

- A.Tanenbaum : *Modern Operating Systems (3rd edition)*, Prentice-Hall International, 2008.

- F.M.Boian et al. : *Sisteme de operare*, Editura Risoprint, Cluj-Napoca, 2006.

8.2	Seminary / Laboratory	Teaching methods	Observations (hours and bibliographic references)
1.	Introduction to UNIX/Linux	Exposure, exercises, individual work, solutions to the blackboard	2
2.	Basic commands. The filesystem	Idem	2
3.	The scripting language bash (Part I)	Idem	2
4.	The scripting language bash (Part II)	Idem	2
5.	The first laboratory test	Testing using a computer	-
6.	System calls for working with files	Idem 1.	2
7.	Exclusive access to files (locks)	Idem	2
8.	Creating and synchronizing processes	Idem	2
9.	Overloading processes	Idem	2
10.	IPC through anonymous channels	Idem	2
11.	IPC through fifo channels	Idem	2
12.	Notification of processes through signals	Idem	2
13.	The second laboratory test	Testing using a computer	-
14.	Management of terminals. Ncurses library. The graphical user interface	Exposure, exercises	2

Bibliography

- C.Vidrașcu : *Sisteme de operare. Manual pentru ID*, Editura Universității „Al.I.Cuza”, Iași, 2004.

- R.Stevens : *Advanced UNIX Programming in the UNIX Environments*, Addison-Wesley, 1992.

- C.Moroșanu, S.Pavăl : *Sisteme de operare. Instalare, programare, utilizare LINUX*. Editura Universității „Al.I.Cuza”, Iași, 2006.

**9. Course content synchronization with the expectations of the community representatives, professional associations and employers from the program domain**

Course content provides the necessary skills to work on the Linux platform, the second platform (after Windows) used as a target for the development of commercial applications by IT companies.

10. Evaluation

Activity Type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 The weight of each evaluation form (%)
10.4 Course	Ability to apply theoretical elements to solve practical problems.	written test	40%
10.5 Seminary/ Laboratory	The ability to use specific commands and to develop programs for Linux platform.	two tests using a computer assessment of classroom activity	50% 10%
10.6 Minimal performance standards			
<ul style="list-style-type: none">- Use an operating system: minimal knowledge of the text interface provided by Linux- Implementation and documentation of program units in the C programming language for programmatic access to the services provided by a Linux system - To promote you have to obtaine at least a minimum threshold (which will be communicated to the first class and posted on the course webpage) of the maximum score that can be achieved, both at the written test and at the laboratory tests.- Final grades are computed according to the ECTS criteria.			

Date
19.05.2014

Course Teacher
Lecturer Cristian Vidrașcu, PhD

Seminary/Laboratory Teacher
Lecturer Cristian Vidrașcu, PhD

Department Date of Approval

Director of the Department
Professor Dorel Lucanu, PhD