SYLLABUS

SYSTEM AND NETWORK ADMINISTRATION

University year 2025-2026

1. Information regarding the programme

1.1. Higher education institution	Babeş-Bolyai University
1.2. Faculty	Faculty of Mathematics and Computer Science
1.3. Department	Department of Computer Science
1.4. Field of study	Computer Science
1.5. Study cycle	Licență
1.6. Study programme/Qualification	Computer Science
1.7. Form of education	Full time

2. Information regarding the discipline

2.1. Name of the dis	cipli	ne System an	System and Network Administration				Discipline code	MLE5072
2.2. Course coordinator				Lect. Dr. Radu DRAGOŞ				
2.3. Seminar coordinator				Lect. Dr. Radu DRAGOŞ				
2.4. Year of study	3	2.5. Semester	6	2.6. Type of evaluation	on	С	2.7. Discipline regime	Optional

3. Total estimated time (hours/semester of didactic activities)

3.1. Hours per week	4	of which: 3.2 course	2	3.3 seminar/laboratory/project	2
3.4. Total hours in the curriculum	48	of which: 3.5 course	24	3.6 seminar/laboratory/project	24
Time allotment for individual study (ID) and self-study activities (SA)					hours
Learning using manual, course support, bibliography, course notes (SA)					30
Additional documentation (in libraries, on electronic platforms, field documentation)					10
Preparation for seminars/labs, homework, papers, portfolios and essays					20
Tutorship					5
Evaluations					12
Other activities:					
3.7. Total individual study hours77					
3.8. Total hours per semester	125				
3.9. Number of ECTS credits 5					

4. Prerequisites (if necessary)

4.1. curriculum	
4.2. competencies	

5. Conditions (if necessary)

5.1. for the course	
5.2. for the seminar /lab activities	

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Professional/essential competencies	 design and administration of computer networks development and maintenance of software systems
Transversal competencies	 application of organized and efficient work rules, of responsible attitudes towards the didactic-scientific field, to bring creative value to own potential, with respect for professional ethics principles and norms use of efficient methods and techniques to learn, inform, research and develop the abilities to bring value to knowledge, to adapt at the requirements of a dynamical society and to communicate efficiently in Romanian language and in an international language

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6.2. Learning outcomes

Knowledge	 The graduate has the basic knowledge required to install, configure and maintain a server system on the Internet. The graduate has adequate knowledge of the protocols by which the Internet works and has the necessary skills to design and test his/her own protocols.
Skills	 The graduate is able to design and maintain a computer network of medium complexity The graduate has the necessary knowledge of Internet security and is able to apply this knowledge to validate and maintain a computer network that exposes common services that are securely accessible from the outside
Responsibility and autonomy:	 The graduate has the ability to understand and communicate information effectively The graduate has the knowledge to select and use appropriate instructional procedures to facilitate the process of knowledge assimilation

7. Objectives of the discipline (outcome of the acquired competencies)

7.1 General objective of the discipline	 Know and understand fundamental concepts of system administration as well as the security aspects related to this process; Know and understand fundamental concepts of network administration as well as the security aspects related to this process.
7.2 Specific objective of the discipline	 At the end of the course, students know the main concepts and principles of installing major operating systems know the main concepts and principles of configuring major operating systems are able to install and configure networking services on major operating systems are able to install and configure main networking equipment devices

¹ One can choose either competences or learning outcomes, or both. If only one option is chosen, the row related to the other option will be deleted, and the kept one will be numbered 6.

8. Content

8.1 Course	Teaching methods	Remarks			
1.Introduction to Sysadmin and	Tertene etime energi				
NetworkAdmin,	Interactive exposure				
Concepts, motivation, objectives, real life	Explanation				
examples	Conversation				
2.Virtualization sollutions					
Oracle VirtualBox	Interactive exposure				
WMware	Explanation				
HyperV	Conversation				
3 Installing an operating system					
Linux	Interactive exposure				
BSD	Explanation				
 Microsoft Windows Server 	Conversation				
	Interactive exposure				
4.Configure networking for an operating	Fynlanation				
system Linux/BSD/Windows Server	Conversation				
5 DHCP configuration	Interactive exposure				
Linux /BSD /Windows Sorver	Explanation				
Static (dynamic bindings and lease times	Conversation				
6 DNS configuration	Conversation				
0.DNS configuration	Interactive exposure				
LINUX/BSD/WINDOWS Server	Explanation				
undates, neguraion	Conversation				
Updates, recursion	Interestive encours				
/.HITPCONIGURATION	Euclaration				
Linux/DSD/Windows Server	Explanation				
	Conversation				
8.MAIL+MA configuration	Interactive exposure				
Linux/DSD/Windows Server	Explanation				
Mali feli feval	Conversation				
POP5/IMAP/Weblildli					
Jinux (DSD /Windows Server					
	Interactive exposure				
• Intrusion prevention	Explanation				
• Intrusion detection	Conversation				
• penetration testing					
service isolation					
	Interactive exposure				
10.Networking appliances configuration	Explanation				
	Conversation				
11. Dedicated Internet services appliances	Interactive exposure				
MX and AntiSpam	Explanation				
Firewalls	Conversation				
Network packet annalyzers					
	Interactive exposure				
12 Security Certificates	Explanation				
Conversation					
Bibliography					
1. Computer Networks, Andrew S. Tanenbaum & David J. Wetherall					
2. Computer Networks: A Systems Approach, Larry L. Peterson & Bruce S. Davie					
9.2 Sominar / Jahoratory Taaghing methods Demovies					
Diblic member					
Bibliography					
1 I AMMIITAR MATMARKE ABARAMINE TABABBANES	David I Watharall				

2. Computer Networks: A Systems Approach, Larry L. Peterson & Bruce S. I 3. The Internet and Its Protocols: A Comparative Approach, Adrian Farrel

9. Corroborating the content of the discipline with the expectations of the epistemic community, professional associations and representative employers within the field of the program

• The content of the course covers the most important aspects necessary for a system administrator

10. Evaluation

Activity type	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Percentage of final grade				
10.4 Course		Exam	50				
10.5 Seminar/laboratoryPractical exam50							
10.6 Minimum standard of performance							
At least grade 5 for the project and practical exam							

11. Labels ODD (Sustainable Development Goals)²

Not applicable.

Date: 15.04.2025 Signature of course coordinator Lect Dr. Radu DRAGOS Signature of seminar coordinator

Lect Dr. Radu DRAGOS

Date of approval:

Signature of the head of department

Assoc.prof.phd. Adrian STERCA

² Keep only the labels that, according to the <u>Procedure for applying ODD labels in the academic process</u>, suit the discipline and delete the others, including the general one for *Sustainable Development* – if not applicable. If no label describes the discipline, delete them all and write "*Not applicable*.".