SYLLABUS

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	**Computers and Information Technology**
1.5 Study cycle	**Undergraduate**
1.6 Study programme / Qualification	

2. Information regarding the discipline

2.1 Name of the discipline (en) (ro)			**Network and system administration** **Administrare de sistem şi de reţea**				
2.2 Course coordinator			**Lect. Dr. Radu DRAGOȘ**				
2.3 Seminar coordinator			**Lect. Dr. Radu DRAGOȘ**				
2.4. Year of study	**1**	2.5 Semester	**2**	2.6. Type of evaluation	**C**	2.7 Type of discipline	**Optional**
2.8 Code of the discipline		MME8196					

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

3.1 Hours per week	3	Of which: 3.2 course	2	3.3 seminar/laboratory	1 seminar
3.4 Total hours in the curriculum	42	Of which: 3.5 course	28	3.6 seminar/laboratory	14
Time allotment:					hours
Learning using manual, course support, bibliography, course notes					36
Additional documentation (in libraries, on electronic platforms, field documentation)					36
Preparation for seminars/labs, homework, papers, portfolios and essays					36
Tutorship					11
Evaluations					14
Other activities:					-

3.7 Total individual study hours	133
3.8 Total hours per semester	175
3.9 Number of ECTS credits	7

4. Prerequisites (if necessary)

4.1. curriculum	• Operating Systems; Computer Networks

4.2. competencies	• Average programming skills

5. Conditions (if necessary)

5.1. for the course	•
5.2. for the seminar /lab activities	• Laboratory with computers

6. Specific competencies acquired

Professional competencies	• C4.1 Identifying and describing technologies, programming environments and various concepts that are specific to programming engineering • C4.3 Developying specifications and designing information systems using specific methods and tools • C4.5 Developing, implementing and integrating software solutions
Transversal competencies	• CT1 Honorable, responsible, ethical behavior, in the spirit of the law, to ensure the professional reputation • CT3 Demonstrating initiative and pro-active behavior for updating professional, economical and organizational culture knowledge

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. • Know and understand fundamental concepts of network administration.
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

8. Content

8.1 Course	Teaching methods	Remarks
1. Introduction to Sysadmin and NetworkAdmin, Concepts, motivation, objectives, real life examples	● Interactive exposure ● Explanation ● Conversation	
2. Virtualization sollutions • Oracle VirtualBox • WMware • HyperV	● Interactive exposure ● Explanation ● Conversation	

3. Installing an operating system • Linux • BSD • Microsoft Windows Server	● Interactive exposure ● Explanation ● Conversation ● Didactical demonstration	
4. Configure networking for an operating system Linux/BSD/Windows Server	● Interactive exposure ● Explanation ● Conversation ● Didactical demonstration	
5. DHCP configuration Linux/BSD/Windows Server Static/dynamic bindings and lease times	● Interactive exposure ● Explanation ● Conversation ● Didactical demonstration	
6. DNS configuration Linux/BSD/Windows Server DNS zones, delegation, master/slave, dynamic updates, recursion	● Interactive exposure ● Explanation ● Conversation ● Didactical demonstration	
7. HTTP configuration Linux/BSD/Windows Server Name based Virtual Hosting	● Interactive exposure ● Explanation ● Conversation ● Didactical demonstration	
8. MAIL+MX configuration Linux/BSD/Windows Server Mail retrieval POP3/IMAP/Webmail	● Interactive exposure ● Explanation ● Conversation ● Didactical demonstration	
9. NetworkSecurity (firewall) configuration Linux/BSD/Windows Server • intrusion prevention • intrusion detection • penetration testing • service isolation	● Interactive exposure ● Explanation ● Conversation ● Didactical demonstration	
10. Networking appliances configuration ● managed switches ● layer 3 switches ● home/small busines switches ● routers	● Interactive exposure ● Explanation ● Conversation	
11. Dedicated Internet services appliances MX and AntiSpam Firewalls Network packet annalyzers	● Interactive exposure ● Explanation ● Conversation ● Didactical demonstration	
Bibliography		

1. **Computer Networks**, Andrew S. Tanenbaum & David J. Wetherall 2. **Computer Networks: A Systems Approach,** Larry L. Peterson & Bruce S. Davie 3. **The Internet and Its Protocols: A Comparative Approach,** Adrian Farrel		
8.2 Seminar / laboratory	Teaching methods	Remarks
Bibliography 1. **Computer Networks**, Andrew S. Tanenbaum & David J. Wetherall 2. **Computer Networks: A Systems Approach,** Larry L. Peterson & Bruce S. Davie 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

Type of activity	10.1 Evaluation criteria	10.2 Evaluation methods	10.3 Share in the grade (%)
10.4 Course		Project	50
10.5 Seminar/lab activities		Practical exam	50
10.6 Minimum performance standards			
➢ At least grade 5 for the project and practical exam			

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

Date of approval ..... Signature of the head of department

Prof. dr. Laura Dioşan