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	**Bachelor**
1.6 Study programme / Qualification	**Computer Science**

2. Information regarding the discipline

2.1 Name of the discipline	**System and Network Administration**						
2.2 Course coordinator	**Lect.PhD. Radu DRAGOS**						
2.3 Seminar coordinator	**Lect.PhD. Radu DRAGOS**						
2.4. Year of study	**3**	2.5 Semester	**6**	2.6. Type of evaluation	**E**	2.7 Type of discipline	**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	**1**
3.4 Total hours in the curriculum	**36**	Of which: 3.5 course	**24**	3.6 seminar/laboratory	**12**

3.7 Total individual study hours	**164**
3.8 Total hours per semester	**200**
3.9 Number of ECTS credits	**5**

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	● Video projector
5.2. for the seminar/lab activities	● Computers

6. Specific competencies acquired

Professional competencies	● Understanding and working with basic concepts in networking and system administration; ● Proficient use of networking equipment ● Knowing the specifics of main networking architectures
Transversal competencies	● Professional communication skills; concise and precise description, both oral and written, of professional results, ● Independent and team work capabilities; able to fulfill different roles ● Capability of analysis and synthesis;

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	Exposure, description, explanation, case studies	
2. Installing an operating system	Exposure, description,	

- Linux - BSD - Microsoft Windows Server	explanation, case studies	
3. Configure networking for an operating system Linux/BSD/Windows Server	Exposure, description, explanation, case studies	
4.1 DHCP configuration Linux/BSD/Windows Server 4.2 Static/dynamic bindings and lease times	Exposure, description, explanation, case studies	
5. DNS configuration Linux/BSD/Windows Server 5.2 DNS zones, delegation, master/slave, dynamic updates, recursion	Exposure, description, explanation, case studies	
6.1 HTTP configuration Linux/BSD/Windows Server 6.2 Name based Virtual Hosting	Exposure, description, explanation, case studies	
7.1 MAIL+MX configuration - Linux/BSD/Windows Server 7.2 Mail retrieval - POP3/IMAP/Webmail	Exposure, description, explanation, case studies	
8. NetworkSecurity (firewall) configuration Linux/BSD/Windows Server	Exposure, description, explanation, case studies	
9. Virtualization sollutions - Oracle VirtualBox - WMware - HyperV - Xen Hypervisor	Exposure, description, explanation, case studies	
10. Networking appliances configuration - managed switches - layer 3 switches - home/small busines switches - routers	Exposure, description, explanation, case studies	
11. Dedicated Internet services appliances - MX and AntiSpam - Firewalls - Network packet annalyzers	Exposure, description, explanation, case studies	

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

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

10. Evaluation
- Laboratory activity 20%
- Practical implementation 50%
- Written exam   30%