**SYLLABUS**

**1. Information regarding the programme**

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| 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**

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| 2.1 Name of the discipline | **System and Network Administration** | | | | | | |
| 2.2 Course coordinator | **Lect. Dr. Radu DRAGOS** | | | | | | |
| 2.3 Seminar coordinator | **Lect. Dr. Radu DRAGOS** | | | | | | |
| 2.4. Year of study | **3** | 2.5 Semester | **6** | 2.6. Type of evaluation | **C** | 2.7 Type of discipline | **optional** |

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

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|---|---|---|---|---|---|
| 3.1 Hours per week | **3** | 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** |
| Time allotment: | | | | | hours |
| Learning using manual, course support, bibliography, course notes | | | | | **24** |
| Additional documentation (in libraries, on electronic platforms, field documentation) | | | | | **22** |
| Preparation for seminars/labs, homework, papers, portfolios and essays | | | | | **24** |
| Tutorship | | | | | **5** |
| Evaluations | | | | | **14** |
| Other activities: ..... | | | | | - |

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| 3.7 Total individual study hours | **89** |
| 3.8 Total hours per semester | **125** |
| 3.9 Number of ECTS credits | **5** |

**4. Prerequisites** (if necessary)

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| 4.1. curriculum | ● Operating Systems; Computer Networks |
| 4.2. competencies | ● Average programming skills |

**5. Conditions** (if necessary)

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| 5.1. for the course | ● Video preojector |
| 5.2. for the seminar /lab activities | ● Laboratory with computers |

**6. Specific competencies acquired**

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| **Professional competencies** | • C6.1 Identifying base concepts and models of operating systems and computer networks.<br>• C6.3 Techniques for installation, configuration and administration of operating systems and computer networks. |
| **Transversal competencies** | • CT1 Applying organized and efficient work rules, the responsible attitudes of the scientific<br>teaching for creative exploitation of their potential with the principles and rules of professional ethics.<br>• CT3 Utilization of efficient models and techniques for studying, information, research and development of knowledge usage and adaptation to a dynamic society and communication in Romanian language and an international language |

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

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| 7.1 General objective of the discipline | • Know and understand fundamental concepts of system administration.<br>• Know and understand fundamental concepts of network administration. |
| 7.2 Specific objective of the discipline | At the end of the course, students<br>• know the main concepts and principles of installing major operating systems<br>• know the main concepts and principles of configuring major operating systems<br>• are able to install and configure networking services on major operating systems<br>• 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<br>• motivation<br>• objectives<br>• real life examples | • Interactive exposure<br>• Explanation<br>• Conversation<br>• Didactical demonstration | |
| 2. Installing an operating system<br>• Linux<br>• BSD<br>• Microsoft Windows Server | • Interactive exposure<br>• Explanation<br>• Conversation<br>• Didactical demonstration | |
| 3. Configure networking for an operating system<br>• Linux/BSD/Windows Server | • Interactive exposure<br>• Explanation<br>• Conversation | |

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|---|---|---|
| | ● Didactical demonstration | |
| 4.1 DHCP configuration<br>● Linux/BSD/Windows Server<br>4.2 Static/dynamic bindings and lease times | ● Interactive exposure<br>● Explanation<br>● Conversation<br>● Didactical demonstration | |
| 5. DNS configuration<br>● Linux/BSD/Windows Server<br>5.2 DNS zones, delegation, master/slave, dynamic updates, recursion | ● Interactive exposure<br>● Explanation<br>● Conversation<br>● Didactical demonstration | |
| 6.1 HTTP configuration<br>● Linux/BSD/Windows Server<br>6.2 Name based Virtual Hosting | ● Interactive exposure<br>● Explanation<br>● Conversation<br>● Didactical demonstration | |
| 7.1 MAIL+MX configuration<br>● Linux/BSD/Windows Server<br>7.2 Mail retrieval<br>● POP3/IMAP/Webmail | ● Interactive exposure<br>● Explanation<br>● Conversation<br>● Didactical demonstration | |
| 8. NetworkSecurity (firewall) configuration<br>● Linux/BSD/Windows Server | ● Interactive exposure<br>● Explanation<br>● Conversation<br>● Didactical demonstration | |
| 9. Virtualization sollutions<br>● Oracle VirtualBox<br>● WMware<br>● HyperV<br>● Xen Hypervisor | ● Interactive exposure<br>● Explanation<br>● Conversation<br>● Didactical demonstration | |
| 10. Networking appliances configuration<br>● managed switches<br>● layer 3 switches<br>● home/small busines switches<br>● routers | ● Interactive exposure<br>● Explanation<br>● Conversation<br>● Didactical demonstration | |
| 11. Dedicated Internet services appliances<br>● MX and AntiSpam<br>● Firewalls<br>● Network packet annalyzers | ● Interactive exposure<br>● Explanation<br>● Conversation<br>● Didactical demonstration | |
| **Bibliography**<br>1. Computer Networks, Andrew S. Tanenbaum & David J. Wetherall<br>2. Computer Networks: A Systems Approach, Larry L. Peterson & Bruce S. Davie<br>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**

| Type of activity | 10.1 Evaluation criteria | 10.2 Evaluation methods | 10.3 Share in the grade (%) |
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| 10.4 Course | ● | Written exam | 50 % |
| 10.5 Lab activities | ● | Practical exam | 50 % |
| 10.6 Minimum performance standards | | | |
| ● At least grade 5 at both written exam and laboratory work. | | | |

| Date | Signature of course coordinator | Signature of seminar coordinator |
|---|---|---|
| 3.05.2015 | Lect Dr. Radu DRAGOS | Lect Dr. Radu DRAGOS |

Date of approval — Signature of the head of department