**General Information:**

**Name of Course: Linux System Administration**

**Course Code: PMTRTNB319HA**

**Semester: 5**th

**Number of Credits:** 5

**Allotment of Hours per Week:** 2 lectures, 2 practices

**Evaluation:** Exam (with grade)

**Prerequisites: Operating Systems**

**Instructors: Zsolt SCHÄFFER, contracted lecturer**

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**Introduction, Learning Outcomes**

The goal of the course -built on knowledge acquired from prerequisite course(s)- is to provide an in-depth view of Unix-like systems, server- and datacentre technologies. The course offers advanced, valuable, and practice heavy knowledge about launching, configuring and maintaining enterprise class Web/Database/Storage/Application services on the RedHat family of Linux platforms. Another important goal of the course is for students to comprehend server/datacentre operation concepts, and acquire self-sufficient problem solving skills.

**General Course Description and Main Content:**

This lecture and practice based course aims to give computer science engineering students a solid basis in server operations through covering the following topics:

* Advanced Unix/Linux server and service operation
* Configuring networking and firewalls
* Advanced storage concepts, including multi-device filesystems, logical volumes, thin provisioning and device mapper RAID technologies
* Configuring security, SELinux contexts and ACLs
* Providing and securing web (apache), and database (MariaDB) services
* Providing file storage services, including the configuration and deployment of vsftpd, samba and NFS services

**Methodology:**

The presentations give an explanations of server operating system concepts and theory behind engineering standards. The practice includes deploying and configuring of various services, and conducting routine server, network and storage management tasks. Practices are carried out on real-world software with each student working in an isolated personal virtual environment, which follows the server-client model and consists of multiple nodes.

**Schedule:**

Study period in 15 weeks: September - December (2017)

1. Introduction to the lab environment. General Unix and operating system concepts.
2. File operations, command line text editors. Bash shell, scripting basics.
3. Administering users. Discretionary access control, access control lists,
4. Security Enhanced Linux, SELinux contexts, policies. Process management.
5. Partitioning, volume management, file systems. Package managers.
6. The Linux boot process, daemon management, systemd.
7. Network configuration and firewall management.
8. Autumn break.
9. Logging, scheduled tasks.
10. Service deployment and configuration: sshd, dhcpd, smbd, vsftpd.
11. Service deployment and configuration: MariaDB, Apache httpd.
12. Network filesystems, NFS v2-v4, Samba, autofs.
13. Backup and archival. Virtualization basics.
14. Name resolution, the domain naming system. Mail delivery, dovecot, postfix.
15. Overview and exam know-how.

Correction period: First two weeks of the exam period

Exams: 4 exam appointments, spread through the exam period, in classroom A101. Exact times to be determined by the end of study period.

**Attendance:**

Attending is required in at least 70% of all classes. Attendance will not impact the grade. In case of absence from more than 30% of the total number of lessons will be grounds for failing the class. To be in class at the beginning time and stay until the scheduled end of the lesson is required, tardiness of more than 15 minutes will be counted as an absence. In the case of an illness or family emergency, the student must present a valid excuse, such as a doctor's note.

**Evaluation and grading**

Student are required to fill in a short quiz tests at the start of 5 randomly chosen lessons. Only the sum of the 5 short tests matters, the individual results don’t. Student have to reach 65% of correct answers in the tests. In case of falling short, the quiz tests can be re-taken on a maximum of two occasions during the correction period. Failing to achieve the rate of 65% by the end of correction period is grounds to failing the class.

The course concludes with a practice exam, where students have to analyze, diagnose and repair a failing/misconfigured system running in a specially prepared virtual environment. Acquiring at least 50% of the marks in this practice exam is required in order to pass.

Final grading is calculated with the weights described below, with the following exceptions: In case the result of the practice exam falls below the minimum of 50%, the grade will be 1, regardless of the weighted sum. In case of falling short of the 65% requirement for the quiz test, the grade will be 0, regardless of the weighted sum.

1. Quiz tests: 20 % weight (A performance of at least 65% is required to pass)
2. Practice exam: 80 % weight (A performance of at least 50% is required to pass)

**Grading scale**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Numeric Grade: | 5 | 4 | 3 | 2 | 1 | 0 |
| Evaluation in points: | 89%-100% | 77%-88% | 66%-76% | 53%-65% | below 53% | If failing the quiz tests |

**Students with special needs:**

Students with special physical needs and requiring special assistance must first register with the Dean of the Students Office. All reasonable requests to provide an equal learning environment for all students is to be assured.

**Required Reading and other Materials will be equivalent to:**

Students will be provided with the HTML version of Linux learning materials, and will be provided with the PDF version of all slides/presentations of the course on the faculty’s Moodle learning support system.