



CS314

UNIX OPERATING SYSTEMS

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ANNOTATION

The discipline is a basic course for the specialities in fields 4.6 and 5.3.

The discipline introduces students to the basic concepts and technologies used in Linux operating systems. It covers: file system, command line, scripting, software installation, archiving and unzipping, mounting remote file systems and quotas, with emphasis on Linux OS. The discipline ends with passing an exam. The course provides prerequisites for passing the 101 exam, according to LPI's (Linux Professional Institute) LPIC-1 (Junior Linux Administrator) certification program.

MAIN OBJECTIVES

The main goal of the course is to form students' knowledge and skills for installation, setup and maintenance of a Linux system. After studying the subject, the student will:

- understands the basic concepts and concepts at Linux;
- demonstrate knowledge of open source applications;
- has skills to work with Linux command line and terminal devices;
- can perform basic maintenance tasks;
- can install and configure applications under Linux.

PREREQUISITES

The discipline requires knowledge of the disciplines: Computer Architectures, Operating Systems and Computer Networks .

STATUS AND STRUCTURE

Specialty	Status	Credits	Full-time study				Part-time study			
			L	S	P	Total	L	S	P	Total
Software Engineering	Selectable	4	20	20	-	40	10	10	-	20
Computer Systems and Technologies	Selectable	4	20	20	-	40	10	10	-	20

COURSE CONTENT

Topic 1. What is Linux ?

Topic 2. File system in Linux. Structure and basic concepts.

Topic 3. Command line. Terminology. Basics. Useful commands.

Topic 4. Text editors and text processing.

Topic 5. Writing Bash Scripts.

Topic 6. Installing software under Linux .

Topic 7. Mounting remote file systems.

Topic 8. Quotas. What they are and use.

SEMINAR EXERCISES

Topic 1. Introduction to Linux. Login to the system. Entrance and exit. Command line. Wrap. Working with the wrapper. Variables and environment.

Topic 2. Getting to know the terminal. Commands in Linux. Channeling and redirection. Working with supporting documentation.

Topic 3. Text editors and text processing. Working with nano and vi.

Topic 4. Introduction to writing Bash scripts. Hello world! Variables. Arguments. User login. Arithmetic operations.

Topic 5. Writing Bash Scripts for Advanced. Conditions. Cycles. Forwarding and channeling. Signal processing. Functions. Colors.

Topic 6. Software installation. Archiving and unzipping.

Topic 7. Mounting remote file systems.

Topic 8. Quotas.

PLANNED LEARNING ACTIVITIES AND TEACHING METHODS

1. During the lectures, students get fundamental theoretical knowledge of the Linux operating system.
2. At the seminar exercises, students acquire practical skills for writing scripts under the Linux operating system .

EVALUATION METHOD

The method of assessment in the discipline UNIX operating systems is a test that every student takes in the exam. An exam exemption is only granted to a student who has successfully passed the 101 exam under LPI's (Linux Professional Institute) LPIC-1 (Junior Linux Administrator) certification program.

RECOMMENDED LITERATURE

1. Abraham Silberschatz, Peter B. Galvin and, Greg Gagne. Operating System Concepts. 10th edition. Wiley. ISBN 978-1119800361. 2021
2. Greg Tomsho. Guide to Operating Systems. 6th edition. Cengage Learning. ISBN 978-0357433836. 2020
3. D.K. Academy, Командите в Linux, Асеневици, 2019
4. Dr. William Stallings. Operating Systems: Internals and Design Principles. 9th edition. Pearson. ISBN 978-0134670959. 2017
5. Иванов И., Стойков П., Операционни системи, част 1 и 2, София, 2016
6. Richard Blum, Christine Bresnahan., Linux Command Line and Shell Scripting Bible, 3rd Edition, 2015, John Wiley & Sons Inc., ISBN-13: 978-1118983843, ISBN-10: 111898384X.
7. Brian Ward, How Linux Works, 2015, No Starch Press Inc., ISBN-13: 978-1593275679, ISBN-10: 1593275676.
8. Christopher Negus, Linux Bible, 9th Edition, 2015, John Wiley & Sons Inc., ISBN-13: 978-1118999875, ISBN-10: 1118999878.
9. William E. Shotts Jr., The Linux Command Line: A Complete Introduction, 2012, No Starch Press Inc., ISBN-13: 978-1593273897, ISBN-10: 1593273894.
10. Vahalia, U., UNIX Internals, The new Frontiers, Prentice Hall, 2011
11. Silberschatz G., Operating System Concepts, 8th, 2011, Wiley, ISBN-10: 1118112733, ISBN-13: 978-1118112731
12. Haeder, A., Stanger, J., Schneiter, S., LPI Linux Certification in a Nutshell, 3rd, 2010, O'Reilly Media, ISBN-10: 0596804873, ISBN-13: 978-0596804879
13. Solomon d., Rosinovich m., Inside Microsoft Windows 2000, Microsoft Press, Redmont 4th Edition, 2010
14. Coulouris G., Distributed Systems. Concepts and Design, 4th Edition Addison Wesley, 2010
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17. Smith, R., LPIC-1: Linux Professional Institute Certification Study Guide: (Exams 101 and 102), 2009, Sybex, ISBN-10: 0470404833, ISBN-13: 978-0470404836
18. Николов Л. Операционни системи, Сиела, София, 2009
19. Baumgartl R., Betriebssysteme, TU-Chemnitz, 2008
20. Rosen, K., Host, D., UNIX: The Complete Reference, 6th, 2006, ISBN-10: 0072263369, ISBN-13: 978-0072263367
21. Smith, R., Linux Administrator Street Smarts: A Real World Guide to Linux Certification Skills, 2006, Sybex, ISBN-10: 0470083484, ISBN-13: 978-0470083482
22. Николов Л. Системно програмиране, Сиела, София, 2005
23. Николов Л., Операционни системи, четвърто издание, Сиела 2005
24. Chapell D., Understanding Windows 2000 Distributed Service, Microsoft Press 2000
25. Stevens R., Advanced Programming in the UNIX Environment. Professional Computing Series. Addison Wesley, 1993
26. Tanenbaum A., Modern Operating Systems, Hanser 1995
27. Kalfa, W., Betriebssysteme. Akademie Verlag Berlin, 1990
28. Linux Document Project, <http://www.linux.org>