

## DESCRIPTION OF THE STUDY SUBJECT

### Title

<b>PROGRAMMATIC NETWORK MANAGEMENT</b>
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### Scope of the subject

Semester	Mode of studies	Structure*				Total number of hours	Number of credits	Group and type of subjects
		L	Lw	C	S			
VI	Full-time	12	21	6	40	79	3	Subjects for deepening in the branch
VII	Part-time	4	14	21	40	79	3	

\*L – lectures, PS – practical activities, seminars, LW – laboratory work, PR – practice, CP – course paper, C – consultations, S – self-study

### Aim of the subject

To understand programmatic management principles of network servers and services, using interfaces of the network operating system, applying scripts and / or networking solutions of programming languages and specialized protocols.

### Necessary background knowledge for studying the subject

Students shall have heard subjects basics of programming, computer networks and communications, management of operating systems, computer hardware, network protocols, network hardware.

### Content of the subject

Title of the topic and description of the content	Number of contact hours			S	Total number of hours
	L	Lw	C		
1. Programmatic management commands of the interface, integrated into the network operating systems. Development, adjustment and usage of scripts intended for management of network nodes.	3	-	-	1	4
Laboratory work No. 1. Development, adjustment and testing of the network server management script.	-	2	1	3	7
Laboratory work No. 2. Development, adjustment and testing of the script for management of network nodes.	-	3	1	3	7
<b>Preparation for the defence of laboratory works and their defence No. 1</b>	-	1	-	4	5
2. Ruby variables, their types, arrays and their usage for management of network components. Types, input, output of operations. Management structures. Lines processing, work with files, directories.	3	-	-	1	4
Laboratory work No. 3. The simplest Ruby program for management of network node processes.	-	2	1	4	8
Laboratory work No.4. Development, adjustment, testing of the program for management of network nodes and their services.	-	3	1	4	8
<b>Preparation for the defence of laboratory works and their defence No. 2</b>	-	1	-	4	5
3. Usage of specialized procedures, packages, and modules for network management. Software for the analysis of the network traffic and for formation of reports.	3	-	-	1	4
Laboratory work No. 5. Development, adjustment and testing of the programme for the analysis of network traffics and / or formation of reports.	-	4	1	5	11
4. Use of SNMP and similar protocols in the solutions of programmatic management of network nodes.	3	-	-	1	4
Laboratory work No. 6. Development, adjustment and testing of the simplest programme communicating via SNMP protocol.	-	4	1	5	10
<b>Preparation for the defence of laboratory works and their defence No. 3</b>	-	1	-	4	5
<b>Total number of hours</b>	<b>12</b>	<b>21</b>	<b>6</b>	<b>40</b>	<b>79</b>

### Assessment of learning outcomes

Ten-point criteria-based assessment system as well as cumulative assessment using individual cumulative index (ICI) are applied. The overall grade is the sum of grades for the defence of laboratory works (DLw) multiplied by weighted coefficients.  $ICI = 0,3 DLw 1 + 0,4 DLw 2 + 0,4 DLw 3$

**Recommended literature**

Key literature						
No.	Year of publishing	Author(s) and title of the publication	Publishing house	Number of copies and/or internet link		
				ŠSC library	Other premises	Other libraries *
1.	2015	Addison Wesley Longman. Programming Ruby. The Pragmatic Programmer's Guide.	Addison Wesley Longman	<a href="http://ruby-doc.com/docs/ProgrammingRuby/">http://ruby-doc.com/docs/ProgrammingRuby/</a>		
2.	2015	Mendel Cooper. Advanced Bash-Scripting Guide.		<a href="http://www.tldp.org/LDP/abs/html/">http://www.tldp.org/LDP/abs/html/</a>		
3.	2015	Machtelt Garrels. Bash Guide for Beginners.	Garrels BVBA	<a href="http://www.tldp.org/LDP/Bash-Beginners-Guide/html/Bash-Beginners-Guide.html">http://www.tldp.org/LDP/Bash-Beginners-Guide/html/Bash-Beginners-Guide.html</a>		
4.	2006	Sarafinienė N., Pocius K. UNIX, Mokomoji knyga	Technologija	3	-	-
Additional literature						
No.	Year of publishing	Author(s) and title of the publication	Publishing house and/or internet link			
1.	2015	Kaklauskas L. Programinis tinklų valdymas	Nuotolinis kursas: <a href="http://moodle.svako.lt">http://moodle.svako.lt</a>			
2.	2011	Sarafinienė N. Operacinės sistemos, Mokomoji knyga	Technologija			
3.	2004	Rapševičius V. UNIX	Vilniaus Universiteto leidykla			

\* ŠAVB – Šiauliai Region Povilas Višinskis Public Library, ŠU – library of Šiauliai University

**Required material resources and their short description**

<ul style="list-style-type: none"> <li>• <b>Equipment (devices):</b> computers (16 units), computers connected to the local network and connected to the Internet, multimedia projector.</li> <li>• <b>Software:</b> Windows operating system, Linux operating system with integrated Perl, Ruby programming languages interpreters.</li> </ul>
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**The description prepared by:**

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