

# ARSENAL ABIS ADMINISTRATOR (Version 4.x)

## TRAINING PROGRAM

**Course duration:** 8,5 training days (or 12 calendar days)

### Admission requirements to learners:

- Skillful PC user knowing computer equipment
- Knowledge of Linux OS fundamentals
- Certified ARSENAL ABIS operator

Form of Classes	Qty	Hours
Lecture, lecture-presentations, lecture-demonstrations	13	25 h. 30 min.
Demonstrations	13	16 h. 30 min.
Practice	13	12 h. 20 min.
Testing	1	6 h. 20 min.
Meetings (Opening and closing sessions)	2	1 h. 40 min.
<b>TOTAL</b>		<b>62 h. 20 min.</b>

### COURSE SYLLABUS

The program of this course is scheduled with provision for coffee breaks and lunch hours.

TOPIC	DESCRIPTION	HOURS
<b>OPENING SESSION</b>	Meeting the students. Administrative questions. Goals and tasks of the course.	40 min.
<b>LECTURE</b> ARSENAL ABIS Administrator's Tasks	Goals and tasks of the Course Introduction to the Course and presenting the training aids <i>Administrator's tasks in servicing the ABIS:</i> <ul style="list-style-type: none"><li>• Monitoring of the system operation</li><li>• System maintenance</li><li>• Keeping the database in up-to-date status</li></ul>	1 h. 30 min.
<b>LECTURE</b> ARSENAL Software and Hardware Configuration	<ul style="list-style-type: none"><li>• System configuration</li><li>• Functions performed by each machine</li></ul>	1 h. 30 min.
<b>LECTURE</b> Linux OS Basics: Key Notions and Principles	<ul style="list-style-type: none"><li>• Linux structure: kernel, modules, software, peripherals, terminals</li><li>• Command line, command line characters, wildcards, file names, suffixes, types of files</li><li>• Users and user groups</li><li>• Processes and types thereof</li><li>• File ownership, file attributes, mask of permissions (rights mask)</li><li>• Hostname, domain name, IP address</li></ul>	3 h. 40 min.

<b>LECTURE</b> Linux OS Basics: Works with Disk-devices	<ul style="list-style-type: none"> <li>• Access to disks and disk partitions as file-devices.</li> <li>• Structure of boot HDD.</li> </ul>	50 min.
<b>LECTURE</b> Command-line Interface. Usage of the Command Line.	<ul style="list-style-type: none"> <li>• General format for issuing commands (utilities)</li> <li>• Types of utilities</li> <li>• Utility options: short and long keys</li> <li>• Command history</li> <li>• Pathnames: absolute (full) and relative</li> <li>• Keyboard shortcuts</li> </ul>	1 h.
<b>DEMONSTRATION</b> Main Utilities of Linux OS	<ul style="list-style-type: none"> <li>• Information utilities: <i>man, info</i>.</li> <li>• Utilities for operation with files: <i>ls, less, tail, cd, pwd, cp, mv, mkdir, du, ln, chmod, chown, grep, rm</i>.</li> <li>• Utilities for operation with archives: <i>zip, unzip</i>.</li> </ul>	2 h.
<b>PRACTICE</b> Main Utilities of Linux OS	Tasks on using the information utilities, utilities for working files and those for operation with archives. Tutor's guidance available.	30 min.
<b>DEMONSTRATION</b> Main Utilities of Linux OS	<ul style="list-style-type: none"> <li>• Utilities for working with processes: <i>ps, top, kill</i>.</li> <li>• Utilities for managing system resources: <i>df, fdisk, dmesg, mount, umount</i>.</li> </ul>	1 h.
<b>PRACTICE</b> Main Utilities of Linux OS	Tasks on using the utilities for operation with processes and system resources. Tutor's guidance available.	30 min.
<b>DEMONSTRATION</b> Main Utilities of Linux OS	<ul style="list-style-type: none"> <li>• Network utilities: <i>ping, traceroute, ifconfig, mii-tool, ssh, scp, who, hostname, host</i>.</li> <li>• Utilities for user management: <i>useradd, passwd, userdel, su</i>.</li> <li>• Others: <i>shutdown (halt, reboot), lsmod, mc</i>.</li> </ul>	1 h.
<b>PRACTICE</b> Main Utilities of Linux OS	Tasks on using the network utilities and those for user management and others. Tutor's guidance available.	30 min.
<b>PRACTICE</b> Main Utilities of Linux OS	Tasks on using the utilities to carry out scheduled preventive maintenance of the ABIS system. Tutor's guidance available.	1 h.
<b>LECTURE</b> Linux OS Basics. File System Tree and Contents of Its Directories.	<ul style="list-style-type: none"> <li>• Main directories of the file tree root</li> <li>• Directory used for operation of ARSENAL ABIS</li> </ul>	1 h.
<b>LECTURE</b> Linux-based ARSENAL ABIS: Key Background Processes. Server. Operator Workstation. Matcher.	<ul style="list-style-type: none"> <li>• <i>xar.chief</i> and <i>ar.fmonitor</i>: mission and launching</li> <li>• <u>Server</u> <ul style="list-style-type: none"> <li>- mission</li> <li>- host name</li> <li>- authorized users</li> </ul> </li> <li>• Background processes: <ul style="list-style-type: none"> <li>- <i>ar.fmonitor</i> (starting and control over background processes)</li> <li>- <i>ar.sync</i> (synchronization of the database file and segments)</li> <li>- <i>ar.serv</i> (file server)</li> <li>- <i>ar.enter</i> (entry of objects into database)</li> <li>- <i>ar.export</i> (export of files)</li> </ul> </li> </ul>	2 h.

	<ul style="list-style-type: none"> <li>- <i>ar.import</i> (import of files)</li> <li>- <i>ar.authserver</i> (authorization server)</li> <li>- <i>ar.distributor</i> (distribution of inquiries between machines)</li> <li>• <u>ABIS Workstation (client)</u> <ul style="list-style-type: none"> <li>- mission</li> <li>- host name</li> <li>- users</li> </ul> </li> <li>• Graphical environment</li> <li>• Background processes: <ul style="list-style-type: none"> <li>- <i>ar.serv</i> (file server)</li> <li>- <i>ar.pass1</i> (processor)</li> </ul> </li> <li>• <u>Matcher:</u> <ul style="list-style-type: none"> <li>- mission</li> <li>- host name</li> <li>- users</li> </ul> </li> <li>• Background processes: <ul style="list-style-type: none"> <li>- <i>ar.serv</i> (file server)</li> <li>- <i>ar.search</i> (search process)</li> </ul> </li> </ul>	
<b>LECTURE</b> Main Directories of ARSENAL ABIS	<ul style="list-style-type: none"> <li>• <b>/bin</b> – executable files (binaries) of the applications</li> <li>• <b>/conf</b> – settings</li> <li>• <b>/export</b> – a directory from where objects are inserted to the database</li> <li>• <b>/lib</b> – libraries required for operation of ABIS</li> <li>• <b>/tiff</b> – tiff-files (for printing)</li> <li>• <b>/wrk0</b> – temporary files created at scanning</li> <li>• <b>/wrk1</b> – files at coding</li> <li>• <b>/wrk2</b> – files after coding</li> </ul>	1 h.
<b>DEMONSTRATION</b> User Management in ARSENAL ABIS	<ul style="list-style-type: none"> <li>• Settings of an access to ARSENAL ABIS services</li> <li>• Creation of new user accounts, editing and deletion</li> </ul>	30 min.
<b>PRACTICE</b> User management in ARSENAL ABIS	Tasks on creating new user accounts and controlling access to the ABIS. Tutor's guidance available.	30 min.
<b>DEMONSTRATION</b> Background Process Management	<ul style="list-style-type: none"> <li>• Adding servers to the list</li> <li>• Control over Background Processes</li> <li>• Error monitoring. View logs of processes.</li> <li>• System information control</li> </ul>	1 h. 20 min.
<b>PRACTICE</b> Background Process Management	Adding servers to the list. Control over Background Processes. Error monitoring. View logs of processes. System information control. Tutor's guidance available.	1 h. 20 min.
<b>LECTURE</b> Structure of the Data Storage System	<ul style="list-style-type: none"> <li>• Location of the database and technological partitions on HDD</li> <li>• Database segments and their contents</li> <li>• Basic segment attributes (with necessary explanations and examples of their use)</li> <li>• Segment structure, purpose of the main parts (<i>*.c, *.k, *.r, *.u; *.cw, *.kw, *.rw, *.uw</i>)</li> <li>• Object entry into the database, description of every stage</li> </ul>	1 h.

	<ul style="list-style-type: none"> <li>• Creation of a backup copy of the segment.</li> </ul>	
<b>DEMONSTRATION</b> Segment Management	<ul style="list-style-type: none"> <li>• Mission and components</li> <li>• Adding and removing database servers</li> <li>• Database segment management</li> <li>• Database recovery</li> <li>• Composition of the database</li> <li>• Creation of backup copy of the segment</li> <li>• Attaching and disabling a segment recorded on a CD</li> <li>• Way to put new segments into the database or restore the database after partial or complete corruption</li> </ul>	2 h.
<b>PRACTICE</b> Segment Management	Individual task on this topic for each student. Monitoring and discussion of the results in the group.	1 h. 30 min.
<b>DEMONSTRATION</b> Search Management	<ul style="list-style-type: none"> <li>• Demonstration of the search management service</li> <li>• Working with a list of search requests</li> </ul>	1 h.
<b>PRACTICE</b> Search Management	Adding matchers to the list. Search request queue management. Dequeue a request. Urgent search request management.	30 min.
<b>DEMONSTRATION</b> Work with Picklists and Dictionaries	<ul style="list-style-type: none"> <li>• Principle of organizing Picklists and Dictionaries</li> <li>• Review and editing of Picklists and Dictionaries</li> </ul>	1 h.
<b>PRACTICE</b> Work with Picklists and Dictionaries	Customization of Picklists and Dictionaries	1 h.
<b>DEMONSTRATION</b> Working with Remote Objects. Viewing Protocols.	<ul style="list-style-type: none"> <li>• Recovery of deleted objects in the database</li> <li>• Demonstration of the protocol viewer</li> <li>• Saving a protocol to a file</li> </ul>	1 h.
<b>PRACTICE</b> Working with Remote Objects. Viewing Protocols.	Recovery of deleted objects in the database Viewing protocols. Saving a protocol to a file.	1 h.
<b>LECTURE</b> Export and Import of Objects from and to the ABIS Database	<ul style="list-style-type: none"> <li>• Export of objects: objectives and procedure</li> <li>• Import of objects: objectives and procedure</li> </ul>	20 min.
<b>DEMONSTRATION</b> Export and Import of Objects from and to the ABIS Database	<ul style="list-style-type: none"> <li>• Export / Import Management Program</li> <li>• Program settings for managing the export and import processes</li> </ul>	2 h.
<b>PRACTICE</b> Export and Import of Objects from and to the ABIS Database.	Tasks on exporting and importing objects from and to the AFIS database. Tutor's guidance available.	1 h.
<b>DEMONSTRATION</b> Setting up the Operating System Repositories	<ul style="list-style-type: none"> <li>• RPM Package Manager</li> <li>• Creating a repository on a local machine</li> <li>• Setting up the repository over the network</li> </ul>	1 h.
<b>PRACTICE</b> Setting up the Operating System Repositories	RPM Package Manager. Creating a repository on a local machine. Setting up the repository over the network. Tutor's guidance available.	1 h.
<b>DEMONSTRATION</b> Monitoring the Work of the Firebird DBMS	<ul style="list-style-type: none"> <li>• Process status monitoring</li> <li>• Control of free disk space availability</li> </ul>	40 min.

<b>LECTURE - DEMONSTRATION</b> Organization of Searches in ARSENAL ABIS. Control and Management of Searches.	<ul style="list-style-type: none"> <li>• The order of performing searches</li> <li>• Location of settings</li> <li>• Setting the length of candidate lists</li> <li>• Features of setting up the search process on the operator's workstation</li> </ul>	1 h.
<b>Sunday</b>	<b>Day Off</b>	
<b>LECTURE - DEMONSTRATION</b> Probable Failures on ABIS and Ways of Troubleshooting	<ul style="list-style-type: none"> <li>• Recovery of the GRUB loader: <ul style="list-style-type: none"> <li>- Creation of an external boot disk</li> <li>- Loading from the external disk</li> <li>- Recovery of the loader</li> </ul> </li> <li>• Use of script-files for automation of administrator's tasks</li> <li>• Check for free space available on disks</li> <li>• Attaching an additional external HDD to the workstation's file system</li> </ul>	7 h. 20 min.
<b>LECTURE- DEMONSTRATION</b> Probable Failures on ABIS and Ways of Troubleshooting (continued)	<ul style="list-style-type: none"> <li>• Attaching of a printer and setup of its parameters: <ul style="list-style-type: none"> <li>- Print server CUPS (viewing status, configuration files, viewing logs)</li> <li>- Types of interfaces for attaching printers</li> <li>- Settings and printer control</li> </ul> </li> <li>• Monitoring and removing errors in the file system</li> <li>• <i>root</i> user password recovery</li> </ul>	2 h. 50 min.
<b>LECTURE</b> Basics of the Ballistic Scanner Settings	<ul style="list-style-type: none"> <li>• Optical scheme, construction and form factor</li> <li>• Elementary calibration of the scanner, check for operability of the scanner components, changing parameters and their impact in the scanner operation</li> </ul>	30 min.
<b>DEMONSTRATION</b> Setting Up the Ballistic Scanner	<ul style="list-style-type: none"> <li>• Troubleshooting, repair and replacement of components</li> <li>• Monitoring and testing</li> <li>• Work with the <i>BS16_Test</i> application</li> </ul>	2 h.
<b>PRACTICE</b> Setting Up the Ballistic Scanner	Task to configure and calibrate the ballistic scanner, and to change its settings. Troubleshooting.	2 h.
<b>FINAL TESTING</b>	Instructions on the final testing procedure. Location and elimination of failures in the ARSENAL ABIS operation. Jobs of routine maintenance. Each student receives an examination card with two tasks, performs the tasks, fills in an exam report, and informs the tutor on the results. Analysis of the results with the tutor.	6 h. 20 min.
<b>CLOSING SESSION</b>	Summarizing the outcome of the training course. Giving certificates.	1 h.