

Module	Submodule	Lesson content	Date
DevOps Introduction	Intro	Introduction to DevOps (term, concept, role, framework, methodology). Traditional Responsibility	1.11
		Software development methodologies: SDLC, waterfall, agile etc	
		Tools: SCM, DB, CI/CD, Cloud, Containers, Monitoring, Security, Collaboration etc.	
		Processes: Build Automation, Continuous Integration and Continuous Deployment	
	Git	Introduction. Type of VCS. Comparison of version control software	
		Installation and Configuration. Creating a Repository and Adding Content	
		Cloning. Logging. Ignoring Content	
		Branching. Merging and Rebase. Pushing and Pulling Updates.	
Virtualization and Cloud Basic	Virtualization	Virtualization types, hypervisor types and function, popular hypervisors.	3.11
		VirtualBox (GUI, CLI, create VM, share folder, access to USB, snapshots, network setting).	
		Vagrant (use of box, creating your own box, basic commands)	
	Cloud Basic	XaaS. Types of Cloud.Types of Data Centers, standards. Main cloud providers.	5.11
		AWS Intro. Free Tier. Global Infrastructure. How AWS is Physically Set Up. Services overview.	
		Introduction to Core AWS Services: VPCs, EC2, RDS, S3, Route 53, ELB, Lambda, ECS	8.11
		Other technology: GCP, Azure, OpenStack, Containers, Docker, K8s, OpenShift, etc	10.11
Networking Fundamentals		Introduction. Terminology. Model OSI. TCP/IP stack	12.11
		DNS. Domain name registration. Privacy and tracking issues. Security issues. DNS protocol transport. DNS message format	
		NAT. NAT implementation classifications. DNAT, SNAT.	15.11
		DHCP. DHCP Options. Implementation of DHCP Service. Configuration Data Sent by DHCP Server and Key Values	
		VLAN. How does it work	17.11
		IPv4, IPv6. Routing. Static and dynamic routing.	19.11
		Protocols, interfaces and services. ICMP, UDP, OSPF, BGP, Telnet.	
		Nslookup, netstat, ifconfig, ping	
Database Administration		Basics of DB and DBMS.	22.11
		Installing MySQL Server, creating a simple database, SQL queries.	
		Database administration, (user access permission, backup, replication, SQL injection)	
		AWS RDS and NoSQL DB	
Linux Essentials		Linux Evolution and Popular Operating Systems - A Linux Introduction. Open Source Philosophy. Distributions. Embedded Systems	24.11
		Understanding Open Source Software and Licensing - Licensing, Free Software Foundation (FSF), Open Source Initiative (OSI), Open Source Business Models	
		Basic Shell. Command Line Syntax - Basic Commands, ls, \$PATH, Case Sensitivity, uname, Command History, Command Completion, cd and pwd. Shell Configuration Files. Variables - Environment / System Variables, User Defined. Globbing, Quoting, Formatting Commands, Working with Options	26.11
		Using the Command Line to Get Help - Man, Info, locate, find, whereis, and using /usr/share/doc/	
		Using Directories and Listing Files - The Linux File System, Files, Directories, Hidden Files and Directories, Home, Absolute and Relative Paths.	

		Creating, Moving and Deleting Files - Files and Directories, Case Sensitivity, Simple Globbing and Quoting	29.11
		Archiving Files on the Command Line - Files, Directories, Archives, Compression.	
		Searching and Extracting Data from Files - Commands (Revisited), Command Line Pipes, I/O Redirection, Regular Expressions	
		Turning Commands into a Script - Basic Text Editing, Basic Shell Scripting, Basic Shell Scripting, Continued	1.12
		Where Data is Stored - Kernel, Processes, syslog, klog, dmesg, /lib, /usr/lib, /etc, /var/log	
		Basic Security and Identifying User Types - Root and Standard Users, System Users	
		Creating Users and Groups - User IDs, User Commands, Group Commands	3.12
		Managing File Permissions and Ownership - File/Directory Permissions and Owners	
		Special Directories and Files - Symbolic Links, System files, Special Files and Sticky Bits	
		Work with disks - mount, umount	
		Methods of delegating root authority (sudo, su)	
		Access Control Lists - ACLs.	
		Role-based access control.	6.12
		Work with the quota mechanism - quota, quotaoff, quotaon, edquota, repquota.	
		Linux Systems with Advanced Security - SE Linux.	
		Plug-in Authentication Modules - PAM.	
		Kerberos network cryptographic authentication protocol (briefly).	
		Remote access. Client-server implementation of a secure terminal (SSH).	
Networks using Linux		LAN concepts. NAT configuring on Linux virtual machine. Frequently used utilities: ip, ifconfig, arp, trace	8.12
		IP forwarding using iptables. Combine different types of network interfaces to provide internet access for the VM2 with "internal" type of network interface, using as a gateway another one VM1 with two network interfaces (NAT and internal) using route and iptables. Check traceroute from VM2 to Host, check ping to 8.8.8.8, determine default gateway, check traceroute to g.co.	
		Installing and configuring DHCP server for the VMs (VM1(DHCP server), VM2 (DHCP client), VM3 (DHCP client)). Check type of present network interfaces, install DHCP server (isc-dhcp-server), configure /etc/network/interfaces manually for all three VMs. Check ip addresses pool, check gaining IP addresses from your new DHCP server.	10.12
		Installing and configuring DNS server for the VMs VM1(DNS server), Check type of present network interfaces, install DNS server (bind9), configure /etc/network/interfaces manually for all three VMs. Check server proper resolving symbol names in IP addresses.	
		IP routing. Combine different types of network interfaces to provide internet access in case of time-to-time failures of one of internet channels (based on "IP forwarding using iptables"). Monitoring of internet channels availability using self-made script or configuring OSPF.	13.12
		Remote access configuring (SSH, FTP). Additional security actions: port forwarding, port obscuring, cancelling root access and cancelling access by login/password. Differences between ssh clients (terminal, putty, mobaxterm, termius, etc)	
Linux Administration with Bash			15.12
		Text utilities: touch, cat, less, cmp, diff, vi, nano	
		Text processing tools: Sed, Awk, Grep, I / O Redirection, Closing File Descriptors	

		The bash command structure: simple, pipeline, list. Command interpreter metacharacters. Using quotes: `,"`. Regular expressions. Command substitution: ` and \$ ()	
		Scenarios: create and launch. Variables: create, export, special internal variables. Internal variables. Positional Parameters and Internal Script Variables	17.12
		Parameter substitution and string operation. Request information from the user. Selection statement: case, select. Calculations in the interpreter: let, expr, (()), operations. Termination code. Functions.	
		Conditional if statement. Loops: select, for, while, until, control the progress of the loop. Command test. Comparing numbers, comparing strings with complex verification conditions.	20.12
		Management of processes and tasks: ps, top, nice, &, jobs, bg, fg, wait, kill. System administration commands. Archiving: tar, gzip.	
Python Intro (under revisioning)		Introduction. Python as a general purpose programming language. Versioning: Python2 vs Python3. References, documentation, libraries: standard and third-parties. Python code editors and IDEs, advantages and features, installing, using, troubleshooting.	27.12
		Python virtual environments	
		Basics. Basic data types, variables, common math operations, compare/condition operators, file operations.	
		Collections and cycles. List, Dict, OrderedDict, tuple, namedtuple, set. Cycles: for, while, continue, break.	29.12
		Functions (procedures / vs methods). Function basics. Built-in-functions, lambda functions, embedded functions and function visibility,	
		Errors and exceptions. Error processing basics. Errors and exceptions. Unit testing basics.	
CI/CD & IaC & Containerization	Continuous Integration: Jenkins	Prerequisites. CI/CD concept as a part of SDLC. Continuous integration. Continuous delivery. Continuous deployment. CI/CD pipeline, Jenkins as a CI/CD framework. Prerequisites before Jenkins installing.	5.01
		Introduction to Jenkins. Best Practices.	
		Installation and Configuration. Download and Installation	10.01
		Managing Jenkins: Securing Jenkins, Managing Credentials, Plugin Management, Jenkins Backup, Create a Build Slave	
		Build Details: Your First Build, Working With Github, Build from Github Project, Scheduling Builds, Build Linking - Upstream and Downstream, Freestyle Maven Project, Managing Remote Systems with Jenkins, Parameterized Builds	12.01
		Pipeline plugin and Jenkinsfile	
		Deploying with Jenkins.	
	IaC: Terraform	Introduction into Infrastructure as a Code. Terraform installation. HCL syntax	17.01
		Terraform providers. Initializing, planning and applying infrastructure configuration	
		Terraform remote state and backends; Implicit and explicit dependencies	19.01
		Input and output variables. Terraform modules overview	
	Containerization: Docker	Introduction to Docker, Containers vs. Virtual Machines, Docker Architecture	21.01
		The Docker Hub. Docker Installation and Configuration. The Container Lifecycle, Image and Container Management	24.01
		Creating our First Image. Working with Multiple Images. Packaging a Customized Container	

		Running Container Commands with Docker. Exposing our Container with Port Redirects and Volumes. The Dockerfile	26.01
	Configuration Management: Ansible	Introduction to Ansible. Ansible vs. Other Classic Tools, like Chef, Puppet, SaltStack. Introduction to YAML. YAML Examples. Ansible Documentation	28.01
		Installation and Configuration. Running Ansible Commands. Gathering Facts	31.01
		Variable Substitution. Debug Statement. Notifications and Handlers	
		Ansible Playbooks. Playbook Structure with YAML. Our First Playbook	2.02
		Ansible Common Modules. Ansible Command Line Usage	
Project		Final project consultation	4.02