

# MTCNA training outline

## Course prerequisites – TCP/IP basics

Title	Objective
<b>Module 1 MikroTik RouterOS Introduction</b>	<p>MikroTik RouterOS and RouterBOARD;</p> <ul style="list-style-type: none"><li>• First time accessing the router + <b>LAB</b>;</li><li>• Winbox and MAC-Winbox;</li><li>• Null Modem cable;</li><li>• SSH and Telnet;</li><li>• Setup Internet connection via router + <b>LAB</b>;</li><li>• IP address and default gateway;</li><li>• DHCP-client;</li><li>• NAT masquerade;</li><li>• TCP/IP Basics;</li><li>• OSI layers and encapsulation;</li><li>• Communication between two network devices;</li><li>• IP addresses;</li><li>• Networks Masks and Subnets;</li><li>• Upgrade RouterOS + <b>LAB</b>;</li><li>• get packages;</li><li>• upgrade ways;</li><li>• type of packages;</li><li>• Manage RouterOS logins + <b>LAB</b>;</li><li>• Manage RouterOS services;</li><li>• Backup and export/import configuration + <b>LAB</b>;</li><li>• save and reload backup;</li><li>• edit export file;</li><li>• RouterOS license;</li><li>• levels;</li><li>• update license + <b>LAB</b>;</li><li>• NTP client configuration;</li><li>• Netinstall + <b>LAB</b>;</li><li>• reinstall RouterOS;</li><li>• reset RouterOS</li></ul>

Title	Objective
<b>Module 2</b> <b>MikroTik RouterOS</b> <b>Firewall</b>	<ul style="list-style-type: none"> <li>• Firewall principles;</li> <li>• structure;</li> <li>• chains and actions + <b>LAB</b>;</li> <li>• Firewall Filter in action;</li> <li>• filter actions;</li> <li>• filter chains;</li> <li>• protecting your router (input) + <b>LAB</b>;</li> <li>• protection your customers (forward) + <b>LAB</b>;</li> <li>• RouterOS connection tracking;</li> <li>• impact on router;</li> <li>• connection state + <b>LAB</b>;</li> <li>• Basic Address-List + <b>LAB</b>;</li> <li>• Source NAT;</li> <li>• actions + <b>LAB</b>;</li> <li>• Destination NAT;</li> <li>• actions;</li> <li>• DNS cache + <b>LAB</b>;</li> <li>• NAT limitations;</li> </ul>

Title	Objective
<b>Module 3</b> <b>MikroTik RouterOS</b> <b>QoS</b>	<ul style="list-style-type: none"> <li>Simple Queue + <b>LAB</b>;</li> <li>• target-address;</li> <li>• max-limit and limit-at;</li> <li>• dst-address;</li> <li>• bursts;</li> <li>• Traffic Prioritization + <b>LAB</b>;</li> <li>• Simple Mangle and Tree Queue + <b>LAB</b>;</li> <li>• mark-connection and mark-packet;</li> <li>• queue tree;</li> <li>• PCQ setup + <b>LAB</b>;</li> <li>• pcq-rate configuration;</li> <li>• pcq-limit configuration;</li> <li>• Bandwidth Test + <b>LAB</b>;</li> <li>• client;</li> <li>• server;</li> <li>• Monitoring;</li> <li>• interface traffic monitor;</li> <li>• Torch;</li> <li>• graphs + <b>LAB</b>;</li> <li>• SNMP;</li> </ul>

Title	Objective
<b>Module 4</b> <b>Mikrotik RouterOS</b> <b>Network Management</b>	<p>ARP + LAB;</p> <ul style="list-style-type: none"><li>• ARP modes;</li><li>• RouterOS ARP table;</li><li>• DHCP server and client + LAB;</li><li>• DHCP client;</li><li>• server setup;</li><li>• leases management;</li><li>• DHCP-server network configuration;</li><li>• HotSpot + LAB;</li><li>• setup;</li><li>• users;</li><li>• walled-garden;</li><li>• ip-binding;</li><li>• user profiles;</li><li>• server profiles;</li><li>• Proxy + LAB;</li><li>• setup;</li><li>• transparent proxy;</li><li>• HTTP firewall;</li><li>• HTTP logging;</li><li>• Store;</li><li>• format additional disks;</li><li>• move services to store;</li><li>• RouterOS tools;</li><li>• E-mail;</li><li>• Netwatch + LAB;</li><li>• Ping, Traceroute;</li><li>• Profile (CPU load);</li></ul>

Title	Objective
<b>Module 5</b> <b>MikroTik RouterOS</b> <b>Wireless</b>	802.11a/b/g/n Concepts; <ul style="list-style-type: none"> <li>• Bands;</li> <li>• Frequencies;</li> <li>• Channels;</li> <li>• Country regulation;</li> <li>• Setup simple wireless link + LAB;</li> <li>• Access Point configuration;</li> <li>• Station configuration;</li> <li>• MAC-address filtering + LAB;</li> <li>• default-authentication;</li> <li>• access-list;</li> <li>• connect-list;</li> <li>• default-forwarding;</li> <li>• Wireless Security and Encryption + LAB;</li> <li>• WPA-PSK;</li> <li>• WPA2-PSK;</li> <li>• 802.11n specific settings + LAB;</li> <li>• data-rates;</li> <li>• HT chains;</li> <li>• HT guard interval;</li> <li>• MikroTik wireless protocols + LAB;</li> <li>• Nstreme usage and configuration;</li> <li>• Nstreme Dual configuration;</li> <li>• NV2 (TDMA) configuration;</li> <li>• Monitoring Tools;</li> <li>• Wireless scan;</li> <li>• Snooper;</li> <li>• Registration table;</li> </ul>

Title	Objective
<b>Module 6</b> <b>MikroTik RouterOS</b> <b>Bridging</b>	<ul style="list-style-type: none"> <li>• Bridging concepts + LAB;</li> <li>• bridge overview;</li> <li>• create bridge;</li> <li>• add ports to bridge;</li> <li>• Bridge wireless networks + LAB;</li> <li>• WDS modes;</li> <li>• station-pseudobridge;</li> <li>• Bridge Wieless and remote networks + LAB;</li> <li>• EoIP tunnel;</li> <li>• VPLS tunnel;</li> </ul>