استاندارد آموزش شایستگی

MikroTik Certified Wireless Engineer (MTCWE)

گروه شغلی

فناوری اطلاعات

کد ملی آموزش شایستگی

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Deputy of training

Plan and curriculums office

Competency Training standard

Title

MikroTik Certified Wireless Engineer (MTCWE)

Occupational group

Information Technology(IT)

International code

2523-53-105-1

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Plan & Curriculum Office

97, nosrat avenue –Tehran, Iran

Tel:+98-21-66569900-9

Fax: +98-21-66944117

E-mail:Barnamehdarci@yahoo.com

	Name & family name	Academic document	Field	Job & post	Relevant experiences	Add & tell & email
1	Elahe Shahidi Arqini	M.Sc.	Software Engineering	Manager	Technical and Vocational Training Organizatio	**Elahe.shahidi2003@gmail.com** Zanjan 09127437670
2	Hamed Razani Feqhi	B.Sc	Software Engineering	Manager	Dana Geophysics IT Unit	**Razani.hamed@yahoo.com** Tehran 09196162453
3	Behrouz Soleymani	PHD	Software Engineering	Manager	Noran	**systemyarteacher@yahoo.com** Tel :
4	Mani Raissdana	B.Sc	Software Engineering	Manager	International Trainer	**m.raissdana@mits-co.com** Tel : 09121497009
5	Abbas Ashourlou	B.Sc	Software Engineering	Manager	Technical and Vocational Training	Hamedan Tel:

Definitions:

Job standard:

The characteristics ' required competencies and abilities for Efficient Performance in work environment is called "the Job standard", and sometimes "The Occupational standard"

Training standard:

The Training Map for achieving the Job's subset Competencies.

Job title:

Is a set of Tasks and Abilities which is expected from an employed person in the defined level

Job description:

A statement covering the most important elements of a job, namely the position or title of the job, the duties, job's relation with other jobs in a occupational field, the responsibilities, workplace conditions and required performance standards.

Course duration:

The minimum of time which is required to achieve the training objects.

Admission requirements:

The minimum of competencies and abilities which are obligatory for a potential admission.

Evaluation:

The process of collecting evidence and judgment about wetter a competency is achieved or not. Include: written examination, practical examination

Required Qualifications for Trainers**:**

The minimum of Trainer's technical and vocational abilities which the trainer is required to have.

Competency:

The ability of efficient performing a duty in a variety of workplaces conditions

Knowledge:

The minimum set of facts and mental capacities which is necessary for achieving a competency. This can include science, (Mathematics, physics, chemistry or biology), technology or technical.

Skill:

The minimum coordination between mind and body for achieving an ability or competency. It normally applied to practical skills.

Attitude:

A set of emotional behaviors required for achieving a competency and can have non-technical skills and occupational ethics.

Safety:

The cases which doing or not doing something can cause harm or accident

Environmental Consideration:

A set of consideration about the act which should be done to minimize the environmental damage or

pollution.

competency title:	

MikroTik Certified Wireless Engineer(MTCWE)

competency description:

MTCWE is one of the engineering course of MikroTik. This course is about wireless network and special feature offer by RouterOS

The holder of MTCWE Certification knows wireless networks concepts and protocols, wireless standard, MikroTik wireless tools, MikroTik special Wireless standard, wireless security and wireless troubleshooting.

The holder of MTCRE certification have following proficiency :
- Will have the ability to understand wireless standards
- Will have the proficient knowledge about different parf of a wireless system include wireless card, wireless antenna, and RouterBoard's wireless features
- Will have the ability to understand and use wireless tools
- Will have the ability to understand and implement wireless advance setting on RouterOS
- Will have the ability to understand and implement wireless connection on Layer2 and Layer3
- Will have the ability to understand and implement wireless security
- Will have the ability to understand and implement WDS and mesh protocol
- Will have the ability to understand and implement Nstreme and Nv2 Protocol
- Will have the ability to understand and implement wireless routble shooting

admission requirements:

minimum degree of education: Post first year of high school
minimum physical and mental ability:-
prerequisite skills: CompTIA Network+ certification – MTCNA Certification

Course duration:

Course duration : 64 hours

Course Evaluation :(%)

Number of questions	25
Passing score	60%
Conditional	50-59%
Fail	0-49%
Duration	60 Minutes
Available Language	English
Associated Certification	MTCWE

IRANTVTO Evaluation :(%)

Written Examination:25%
Practical Examination:65%
Ethics:10%

- MTCWE degree holders with 2 years experience
- Computer related Bachelor with 2 years experience

competency training standard

tasks

Row	Title
1	**Wireless Installations**
2	**Wireless Standard**
3	**Wireless Tools**
4	**Wireless Troubleshooting**
5	**Wireless Advanced Settings**
6	**802.11n**
7	**Wireless Security**
8	**WDS and MESH**
9	**Wireless Bridging**
10	**Nstreme Protocol**
11	**Nv2 Protocol**

Training standard
Contents analysis form

Title: Wireless Installations	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration		Equipments ,tools, materials ,books
Knowledge and Skill: - Wireless routers o RouterBoard Hardware - Wireless cards - Antenna types	Determined by the instructor	- Internet connection - MikroTik Wiki - Computer with at least 2Gbiga byte Of RAM and any version of windows 7 - One RouterBoad which have at least one wireless card for every two person
Attitude: Speed and accuracy in doing the right thing		
Health & Safety: Compliance with safety protection in the workplace		
Environmental Consideration: Compliance with environmental protection		

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Training standard

Contents analysis form

Title: Wireless Standard	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration		Equipments ,tools, materials ,books
Knowledge and Skill: - 802.11 a/b/g/n - Bands and channel width - Frequencies	Determined by the instructor	- Internet connection - MikroTik Wiki - Computer with at least 2Gbiga byte Of RAM and any version of windows 7 - One RouterBoad which have at least one wireless card for every two person
Attitude: Speed and accuracy in doing the right thing		
Health & Safety: Compliance with safety protection in the workplace		
Environmental Consideration: Compliance with environmental protection		

Training standard

Contents analysis form

Title:	time			
Wireless Tools	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books

Knowledge and Skill:
   - o Wireless Tools + LAB
     o Scan
     o Frequency usage
     o Spectral Scan/History
     o Snooper
     o Align
     o Sniffer
	Determined by the instructor			- Internet connection
				- MikroTik Wiki
				- Computer with at least 2Gbiga byte Of RAM and any version of windows 7
				- One RouterBoad which have at least one wireless card for every two person

Attitude: Speed and accuracy in doing the right thing				
Health & Safety: Compliance with safety protection in the workplace				
Environmental Consideration: Compliance with environmental protection				

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Training standard

Contents analysis form

Title:	time			
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Wireless Troubleshooting	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books

Knowledge and Skill:
- Troubleshooting wireless clients + LAB
  o Registration table analysis
  o Ack-Timeout/Distance
  o CCQ
  o TX/RX Signal Strength
  o Frames and HW-frames
  o Data-rates
	Determined by the instructor			- Internet connection
				- MikroTik Wiki
				- Computer with at least 2Gbiga byte Of RAM and any version of windows 7
				- One RouterBoad which have at least one wireless card for every two person

Attitude: Speed and accuracy in doing the right thing				
Health & Safety: Compliance with safety protection in the workplace				
Environmental Consideration: Compliance with environmental protection				

Training standard

Contents analysis form

Title: Wireless Advanced Settings	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books

Knowledge and Skill:
- Advanced Wireless Tab settings + LAB
  o HW-retries
  o HW-protection
  o Adaptive-noise-immunity
- WMM
- Country regulation settings
- TX-power + LAB
- Virtual-AP
	Determined by the instructor			- Internet connection
				- MikroTik Wiki
				- Computer with at least 2Gbiga byte Of RAM and any version of windows 7
				- One RouterBoad which have at least one wireless card for every two person

Attitude: Speed and accuracy in doing the right thing				
Health & Safety: Compliance with safety protection in the workplace				
Environmental Consideration: Compliance with environmental protection				

Training standard

Contents analysis form

Title: 802.11n	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books
- 802.11n wireless protocol + LAB o Features o Data Rates o Channel bonding o Frame Aggregation o TX-power for N cards o Chain settings o Wireless link debugging	Determined by the instructor			- Internet connection - MikroTik Wiki - Computer with at least 2Gbiga byte Of RAM and any version of windows 7 - One RouterBoad which have at least one wireless card for every two person
Attitude: Speed and accuracy in doing the right thing				
Health & Safety: Compliance with safety protection in the workplace				
Environmental Consideration: Compliance with environmental protection				

Training standard

Contents analysis form

Title: Wireless Security	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration	Equipments ,tools, materials ,books

Knowledge and Skill:
- Wireless Security Measures + LAB
   o Access Management
   o Access-List/Connect-List
   o RADIUS
   o Authentication
   o Encryption
   o EAP
   o Management Frame protection
	- Internet connection
	- MikroTik Wiki
	- Computer with at least 2Gbiga byte Of RAM and any version of windows 7
	- One RouterBoad which have at least one wireless card for every two person

Attitude: Speed and accuracy in doing the right thing	
Health & Safety: Compliance with safety protection in the workplace	
Environmental Consideration: Compliance with environmental protection	

Determined by the instructor

Training standard

Contents analysis form

Title: WDS and MESH	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books

Knowledge and Skill:
- Wireless WDS protocol + LAB
   o Dynamic/Static WDS
   o RSTP Bridge
- Wireless MESH + LAB
   o HWMP+ Mesh
	Determined by the instructor			- Internet connection
				- MikroTik Wiki
				- Computer with at least 2Gbiga byte Of RAM and any version of windows 7
				- One RouterBoad which have at least one wireless card for every two person

Attitude: Speed and accuracy in doing the right thing				
Health & Safety: Compliance with safety protection in the workplace				
Environmental Consideration: Compliance with environmental protection				

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Training standard

Contents analysis form

Title: Wireless Bridging	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books
Knowledge and Skill: - Wireless Transparent Bridge + LAB o WDS bridging o AP/Station-WDS o Pseudobridge o MPLS/VPLS tunnel	Determined by the instructor			- Internet connection - MikroTik Wiki - Computer with at least 2Gbiga byte Of RAM and any version of windows 7 - One RouterBoad which have at least one wireless card for every two person
Attitude: Speed and accuracy in doing the right thing				
Health & Safety: Compliance with safety protection in the workplace				
Environmental Consideration: Compliance with environmental protection				

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Training standard

Contents analysis form

Title: Nstreme Protocol	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration				Equipments ,tools, materials ,books

Knowledge and Skill:
 - MikroTik Wireless Nstreme Protocol + LAB
   o Features
   o Configuration options
   o Nstreme Dual
   o Troubleshooting
	Determined by the instructor			- Internet connection
				 - MikroTik Wiki
				 - Computer with at least 2Gbiga byte Of RAM and any version of windows 7
				 - One RouterBoad which have at least one wireless card for every two person

Attitude: Speed and accuracy in doing the right thing				
Health & Safety: Compliance with safety protection in the workplace				
Environmental Consideration: Compliance with environmental protection				

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Training standard

Contents analysis form

Title: Nv2 Protocol	time			
	theoretical	practical	total	
	Determined by the instructor			

Knowledge ,skill ,attitude ,safety, Environmental Consideration	Equipments ,tools, materials ,books

Knowledge and Skill:
- MikroTik Wireless Nv2 Protocol + LAB
  o Features
  o Configuration options
  o Troubleshooting
	Determined by the instructor

- Internet connection
- MikroTik Wiki
- Computer with at least 2Gbiga byte Of RAM and any version of windows 7
- One RouterBoad which have at least one wireless card for every two person

Attitude: Speed and accuracy in doing the right thing

Health & Safety: Compliance with safety protection in the workplace

Environmental Consideration: Compliance with environmental protection

Equipment & Tools & Materials & Resources (books, site, software…) form mikrotik.com and wiki.mikrotik.com

  *Required quantity for each 15 Trainees

  * One 751 RouterBoared or similar model which support wireless for every two person