

Model Curriculum

CCTV Installation Technician

SECTOR: Electronics
SUB-SECTOR: IT Hardware
OCCUPATION: After Sales Services
REF. ID: ELE/Q4605 version1.0
NSQF LEVEL: 4



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

ELECTRONICS SECTOR SKILLS COUNCIL OF INDIA

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/Qualification Pack: '**CCTV Installation Technician**'
QP No. '**ELE/Q4605 NSQF Level 4**'

Date of Issuance: **December, 2015**

Valid up to: **March, 2016**

* Valid up to the next review date of the Qualification Pack



Authorised Signatory
(Electronics Sector Skills Council of India)

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CCTV Installation Technician

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “**CCTV Installation Technician**”, in the “Electronics” Sector/Industry and aims at building the following key competencies amongst the learner

| Program Name | CCTV Installation Technician | | |
|---|--|---------------------|----------------|
| Qualification Pack Name & Reference ID. | CCTV Installation Technician (ELE/Q4605) version 1.0 | | |
| Version No. | 1.0 | Version Update Date | 07 – 12 – 2015 |
| Pre-requisites to Training | ITI Diploma • Minimum 6 months as helper | | |
| Training Outcomes | <p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Interact with the customer in order to identify and understand their requirements. • Ensure customer satisfaction • Install and Repair dysfunctional system. • Identify dysfunctional components through visual inspection and by use of multi meter • To understand CCTV camera installation requirement in terms of equipment, system, tools, applications appropriate for a particular site. • Select Suitable cameras & DVR to provide the better solution to the customers. • Read and Comprehend signs, labels and warning • Communicate effectively • Follow behaviour etiquettes while interacting with others • Establishing good working relationships with colleagues within and outside the department by coordinating | | |

This course encompasses 4 out of 4 National Occupational Standards (NOS) of “CCTV Installation Technician” Qualification Pack issued by “Electronics Sector skill Council of India”.

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---------|---|---|--|
| 1 | <p>security surveillance.</p> <p>Theory Duration (hh:mm) 05:00</p> <p>Practical Duration (hh:mm) 05:00</p> <p>Corresponding NOS Code ELE/N4611</p> | <ul style="list-style-type: none"> Understand the surveillance system Knowledge of pro’s & con’s of surveillance Explain the facts of video surveillance Explain and construct various nodes of CCTV surveillance system | |
| 2 | <p>Functions of video surveillance</p> <p>Theory Duration (hh:mm) 05:00</p> <p>Practical Duration (hh:mm) 05:00</p> <p>Corresponding NOS Code ELE/N4611</p> | <ul style="list-style-type: none"> Constructing of a video surveillance system. Explain function of blocks and equipment required to implement a video surveillance system. Understanding the facts about CCTV and its interfacing devices | <p>a. Camera.</p> <p>b. DVR.</p> <p>c. Cables.</p> <p>d. Adapter</p> <p>e. Display device.</p> |
| 3 | <p>Types of Camera & their functions</p> <p>Theory Duration (hh:mm) 05:00</p> <p>Practical Duration (hh:mm) 05:00</p> <p>Corresponding NOS Code ELE/N4611</p> | <ul style="list-style-type: none"> Understanding the various types of camera and their functionality. Reassembling the camera & exam the parts of camera to understand their mechanism. Selecting suitable camera after understanding | <p>a. Camera(diff. types).</p> <p>b. DVR.</p> <p>c. cable</p> <p>d. Screw driver set.</p> <p>e. Display.</p> |
| 4 | <p>Lens & sensors</p> <p>Theory Duration (hh:mm) 05:00</p> | <ul style="list-style-type: none"> Different types of lens and their utility. Differentiate & select the best camera from the same group depending on the image quality being measured by TVL chart. | <p>a) Lenses(diff. types).</p> <p>b) screw driver set.</p> <p>c) Camera.</p> <p>d) DVR</p> |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---------|--|--|---|
| | <p>Practical Duration (hh:mm) 05:00</p> <p>Corresponding NOS Code ELE/N4611</p> | <ul style="list-style-type: none"> Selecting a camera for higher security application. | |
| 5 | <p>DVR</p> <p>Theory Duration (hh:mm) 05:00</p> <p>Practical Duration (hh:mm) 05:00</p> <p>Corresponding NOS Code ELE/N4611</p> | <ul style="list-style-type: none"> DVR as interface to view and record the image transmitted by a camera. Explain the function of various blocks of DVR. Understand the recording format of a DVR. Enabling and disabling the features of a DVR depending on the level of surveillance and customer requirement. | <p>a) DVR(Diff. Types). b) Camera c) Adapter. d) cable e) Screw driver f) Display.</p> |
| 6 | <p>Principles of remote accessing</p> <p>Theory Duration (hh:mm) 05:00</p> <p>Practical Duration (hh:mm) 05:00</p> <p>Corresponding NOS Code ELE/N4611 ELE/N4610 ELE/N46</p> | <ul style="list-style-type: none"> Explain the nodes for remote access of a CCTV camera / DVR. Configuring the DVR with | <p>a) DVR. b) Camera. c) Cable. d) LAN connection/Modem. e) Laptop. f) Display.</p> |
| 7 | <p>Install the CCTV camera</p> <p>Theory Duration (hh:mm) 30:00</p> <p>Practical Duration (hh:mm) 50:00</p> <p>Corresponding NOS Code ELE/N4610</p> | <ul style="list-style-type: none"> To understand the warranty associated with the hardware product To know related documents for the hardware equipments To know company's policy on product's warranty and other terms and conditions To know company's customer support and service policy To know camera specifications such as focus, lens type, zoom To check the hardware equipments before taking to the installation site To replace the hardware if there is any issue or malfunction is found while testing | <p>Practical Lab *Computer *LCD display *White board *Marker *Tool Kit for installing camera *Installation manual *Safety precaution manual *Hardware equipment</p> |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---------|--------|---|--------------------|
| | | <ul style="list-style-type: none"> • To Know different types of electronic surveillance products and functionalities • To read the standard operating procedures for different equipment • To Know elements of CCTV systems such as camera, DVR, monitor • To check for critical equipment such as camera, recorder w.r.t quality and output • To ensure all the tools, equipments, utilities are available in good to enable installing in single visit • To know specification and the procedures to be followed for setting up the system • To know functions of electrical and mechanical parts or modules • To know power requirement of different CCTV related equipment • To use BNC connectors for joining cables and crimp them • To connect all the cables from multiple cameras to the CCTV system area • To know installation procedures given in the manuals • To use power cable of specified thickness to connect CCTV system with power supply • To know basic electronics involved in the hardware • To know voltage and power requirement for different hardware devices • To know voltage requirement and other specification on CCTV hardware • To mount the CCTV camera so as to cover maximum area • To decide whether the camera requires any enclosure to protect from dust, vandalism and climatic conditions • To know camera specifications such as focus, lens type, zoom • To know controls of different options in camera such as rotation, speed of movement in pan / tilt camera • To use stable mounting structure and ensure that is not disturbed by wind or rain which would affect the video quality | |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---------|--------|--|--------------------|
| | | <ul style="list-style-type: none"> • To decide on the height of camera installation according to the end purpose (for example: if the visitor entering the premise is to be monitored, camera should not be placed too high and their face would not be captured) • To set up the type of camera such as pan, tilt, zoom unit as per customer requirement • To set camera controls • To connect the power and video output cable to the camera • To use tools such as diagonal cutters, screwdrivers, crimp tools, knife for cabling and camera mounting • To use recommended tools for specific equipment to avoid damage • To know functions of electrical and mechanical parts or modules • To know how to operate the system and other hardware • To follow standard operating procedure of tools and equipments and avoid any hazard • To follow the installation manual for specific hardware product • To follow standard safety procedures while installing • To know installation procedures given in the manuals • To operate hardware equipment in CCTV system • To Know safety rules, policies and procedures –To Know quality standards to be followed • To use other specific devices for installation of camera • To improve work processes • To ensure that only quality hardware products are procured complying to industry and quality standards • To ensure product installation and user manual is available which should be given to the user or customer • To ensure that there are no cable joins, sharp bends during cabling • To ensure weather proof (UV proof) cable are used in outdoors • To ensure that cabling is sturdy, protected and does not disturb the ambience of building | |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---------|--|--|--|
| | | <ul style="list-style-type: none"> • To ensure that cameras are protected from light while installing in outdoor • To ensure the intended area is covered during movement in case of tilt or pan type of camera • To assess power requirement of camera and use required power supply and cable • To educate customer on use of cameras for desired monitoring and warranty period and annual maintenance requirement • To ensure zero material damage while handling the equipment during installation process • To install target number of CCTVs as per company's policy • To know company's sales and after sales support policy • To know company's policy on product's warranty and other terms and conditions • To know company's customer support and service policy • To know importance of the individual's role in the workflow • To know company's policies on: incentives, delivery standards, and personnel management • To share work load as required • To achieve the targets given on installations • To reduce repetition of errors | |
| 8 | <p>Setup the CCTV surveillance system</p> <p>Theory Duration (hh:mm) 15:00</p> <p>Practical Duration (hh:mm) 20:00</p> <p>Corresponding NOS Code ELE/N4611</p> | <ul style="list-style-type: none"> • To procure and place the Digital Video Recorder (DVR) in an appropriate place as per customer's requirement • To connect all the cameras installed to the DVR • To ensure that all cameras are connected to the DVR and the wiring is appropriate • To connect the monitor (TV / PC) with the video output connection in the DVR • To connect speakers, if required, for audio output to DVR • To connect the camera optional controls (tilt / pan / zoom) to DVR • To use DVR link option to connect with other DVR in the network | <p>Practical Lab</p> <ul style="list-style-type: none"> *Computer *LCD display *White board *Marker *Tool Kit for installing camera *Installation manual *Safety precaution manual *Hardware equipment |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---------|--|--|--|
| | | <ul style="list-style-type: none"> To connect the DVR to router, if required, to enable remote monitoring To connect the power supply of DVR, monitor, speakers to set up the system To install the appropriate software for IP network or remote monitoring To enter the appropriate IP address to receive the video signals through IP network / internet To connect all equipments and switch on to start the video capture | |
| 9 | <p>Cables</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 20:00</p> <p>Corresponding NOS Code ELE/N4610 ELE/N9909</p> | <ul style="list-style-type: none"> Interfacing the camera with the DVR with suitable medium depending on the wishing network / system if any. Explain and collecting tools required to set up a surveillance system. Discuss with the other team members and about the required specification of a system. Help the team member as a good support worker to create and surveillance system and remain quite and patience at the time of installation / fault finding. | <p>a)Coaxial. b) Fiber optic. c)cat• 5 d) Crimper e)Cutter. d) Connectors.</p> |
| 10 | <p>Survey, planning & maintenance</p> <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 15:00</p> <p>Corresponding NOS Code ELE/N4609 ELE/N4610 ELE/N9909</p> | <ul style="list-style-type: none"> Making a good site survey and identifying the location of the camera to be fixed. Selecting the suitable camera depending on the coverage area required by the customer. Help & co-operate with the team members while taking measurement of the site. Interfacing & connecting the camera and synchronizing it with control room. To make understand the recording & retrieving process of previously recorded footage to the controller of the system. • Convince the customer about the best available camera for better surveillance. | <p>a)DVR(Diff. Types). b)Camera(Diff. Types). C)Adapter. d)Cable(Diff. Types). e)Screw driver. f)Display</p> |
| 11 | <p>Interaction with the customers & colleagues, concept of team work</p> | <ul style="list-style-type: none"> Understand the basic requirements of the customer. Help them to choose the best solution. Continuous interaction with the | <p>a) Laptop. b) Projector.</p> |

| Sr. No. | Module | Key Learning Outcomes | Equipment Required |
|---------|---|---|--------------------|
| | <p>Theory Duration (hh:mm) 10:00</p> <p>Practical Duration (hh:mm) 15:00</p> <p>Corresponding NOS Code ELE/N4609 ELE/N9909</p> | customer for any installation or post installation maintenance | |
| | <p>Total Duration:</p> <p>Theory Duration (hh:mm) 105:00</p> <p>Practical Duration (hh:mm) 150:00</p> | <p>Unique Equipment Required:</p> <ul style="list-style-type: none"> a) Camera(diff. types) b) DVR c) cables d) adapter e) Display device f) Screw driver set g) Lenses(diff. types) h) Laptop i) Internet Connection j) Connectors k) Crimper l) Cutter m) Projector | |

Grand Total Course Duration: 255 Hours 00 Minutes

This syllabus/ curriculum has been approved by Electronics Sector Skill Council

Trainer Prerequisites for Job role: “CCTV Installation Technician” mapped to Qualification Pack: “ELE/Q4605”

| Sr. No. | Area | Details |
|---------|---|---|
| 1 | Job Description | The individual at work is responsible for installing the CCTV system in the customer premises. The individual understand the customer and site requirement, installs the camera and integrates the hardware for effective CCTV surveillance system functioning. |
| 2 | Personal Attributes | The individual must be willing to work in the field and travel through the day from one customer’s premise to another. Punctuality, amenable behaviour, patience, good interpersonal relationship building, trustworthiness, integrity, and critical thinking are important attributes for this Job |
| 3 | Minimum Educational Qualifications | Diploma in Electronics with at least 1• 2 years of experience in installation and troubleshooting of Set Top Box and Direct to Home (DTH) systems. Should have excellent communication skills |
| 4a | Domain Certification | Certified for Job Role: “ <u>CCTV Installation Technician</u> ” mapped to QP: “ <u>ELE/Q4605</u> ”. Minimum accepted score =70% |
| 4b | Platform Certification | Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: ““SSC/Q1402”. Minimum accepted score =70% |
| 5 | Experience | 1- 2 years of experience in installation and troubleshooting of CCTV |

Annexure: Assessment Criteria

| Assessment Criteria for “CCTV Installation Technician” | |
|---|---|
| Job Role | CCTV Installation Technician |
| Qualification Pack | ELE/Q8101version1.0 |
| Sector Skill Council | Electronics Sector Skills Council of India |

| Sr. No. | Guidelines for Assessment |
|----------------|---|
| 1 | Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC. |
| 2 | The assessment for the theory part will be based on knowledge bank of questions created by the SSC. |
| 3 | Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below) |
| 4 | Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criteria |
| 5 | To pass the Qualification Pack , every trainee should score a minimum of 70% in every NOS |
| 6 | In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack. |

| Sr. No. | NOS No. | NOS Name | Total Marks | Marks Allocation: Skills | Marks Allocation: Knowledge | Marks Allocation: Behaviour |
|----------------------------------|-----------|--|-------------|--------------------------|-----------------------------|-----------------------------|
| 1 | ELE/N4609 | Visit site and understand customer's requirement | 100 | 60 | 40 | |
| 2 | ELE/N4610 | Install CCTV camera | 100 | 60 | 40 | |
| 3 | ELE/N4611 | Setup CCTV surveillance system | 100 | 60 | 40 | |
| 4 | ELE/N9909 | Coordinate with colleagues and co-workers | 100 | 60 | 40 | |
| Total: | | | 400 | 240 | 160 | |
| Percentage Weightage: | | | | 60% | 40% | |
| Minimum Pass% to qualify: | | | | 70% | 70% | |



Electronics Sector Skill Council of India

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