



Technical Education  
and Skills Development Authority

# Webliography

The Webliography is an electronic bibliographic listing of topics related to the qualification titles of a particular TVET priority sector, with pre-searched *URLs* (uniform resource locators) and descriptions (abstracts).

The pre-searched *URLs* provide contents in reference to the title of promulgated Training Regulations (TR). By clicking the weblinks (underlined *URLs* in blue text), your internet browser will direct you to the website/webpage where you can find the topic related to the title you selected. The Webliography is a useful tool for trainers who are designing and developing competency-based curriculum and learning materials.

[TESDA](#) » [Webliography](#) » Heating, Ventilating and Air-Conditioning Sector

## INTERNET RESOURCES

### HVAC Sector

#### Scope:

An HVAC system allows building residents to provide a comfortable, climate controlled environment. The installers and mechanics for an HVAC system are called technicians. An HVAC technician will be trained in installation and maintenance, but may specialize in one or the other. HVAC technicians can also choose an equipment specialty, such as commercial refrigeration, hydroponics, or solar panels. The number of job openings for HVAC technicians is expected to increase between 2008 and 2018, according to the Bureau of Labor Statistics. Employment opportunities and salaries are much greater for trained and certified technicians

Source: <http://jobdescriptions.net/maintenance/hvac-technician/>

#### List of qualifications:

- Air Duct Servicing NC II
- Ice-Plant Refrigeration Servicing NC III
- Land-Based Transport MAC Servicing NC II
- RAC (Domestic) Servicing NC II
- RAC (PACU-CRE) Servicing NC III
- Transport RAC Servicing NC II

#### ❖ Definition of HVAC

<http://en.wikipedia.org/wiki/HVAC>

"This webpage from Wikipedia defines HVAC as the technology for indoor and vehicular environmental comfort. HVAC stands for heating, ventilating and air-conditioning.

[Updated May 7, 2019]

#### ❖ HVAC system description

<https://energy.ces.ncsu.edu/heating-ventilation-and-air-conditioning-system-hvac-defined/>

This webpage describes HVAC system in diagrams with explanations.

[Retrieved May 11, 2019]

#### ❖ HVAC technician job responsibilities

<http://jobdescriptions.net/maintenance/hvac-technician/>

This webpage provides information on what HVAC technicians are expected to perform. It also includes training and education requirements, job opportunities. Salary and wages, technician certifications, and professional associations.

[Updated May 11, 2019]

#### ❖ HVAC training jobs in the Philippines

<http://www.careerjet.ph/hvac-training-jobs.html>

This webpage from careerjet.ph provides a list of career opportunities for HVAC technicians in various places in Metro Manila. Each link in the list shows the job title, description, schedule of interviews and contact information of job providers.

[Updated May 11, 2019]

#### ❖ HVAC training courses around the world

<https://live.tpctraining.com/public-seminars/hvac-training>

This webpage from TPC Training provides intensive two-day HVAC training seminars in more than 150 cities annually.

[Updated May 11, 2019]

#### ❖ HVAC Installation Cost 2019 – What's a Fair Price for a New Heating and Air Conditioning Installation?

<https://asm-air.com/hvac/hvac-installation-cost/>

This webpage provides information and relevant data on computing the amount to be paid on troubleshooting and repair works.

[Retrieved May 11, 2019]

#### ❖ HVAC Installation Time – How Long Does It Take to Install a New AC System?

<https://www.asm-air.com/airconditioning/hvac-installation-time/>

This webpage provides information on determining the amount of time required in installing an air conditioning system.

[Retrieved May 11, 2019]

## INTERNET RESOURCES

### Air Duct Servicing NC II

This qualification consists of competencies that a person must achieve to enable him/her to interpret working drawing, fabricates, assembles and installs air ducts using hand and power tools and sheet metal working equipment.

#### Core Competencies:

- Survey site for installation
- Fabricate air ducts
- Install air duct system
- Perform air duct testing
- Insulate air ducts
- Repair and maintain air duct system

#### ❖ Air duct servicing in the Philippines

<http://www.courses.com.ph/air-duct-servicing-nc-ii-tesda-course-philippines/>

This webpage from courses.com.ph describes the course and requirements based on Training Regulations provided by TESDA

[Updated May 11, 2019]

#### ❖ Survey and Installation

<http://www.smartcool.com.ph/services/survey-and-installation/>

This webpage provides information on preparing a site for installation of air conditioning unit. The first step after receiving an enquiry for most air conditioning projects, in an existing building, is to undertake a site survey and meet with the prospective clients.

[Retrieved May 11, 2019]

#### ❖ How to Make HVAC Ducts

<https://www.hunker.com/13415730/how-to-make-hvac-ducts>

This webpage provides information and guide on making sheet metal ducting for the installation of air conditioning unit.

[Retrieved May 11, 2019]

#### ❖ How to Install HVAC Ducts

[https://www.ehow.com/how\\_5010323\\_install-air-ducts.html](https://www.ehow.com/how_5010323_install-air-ducts.html)

This webpage provides information and guide on installing air ducts for the installation of air conditioning unit.

[Retrieved May 11, 2019]

#### ❖ How to Check Your Air Ducts for Leaks

<https://comfortmastersdfw.com/air-ducts/how-to-check-ductwork-for-leaks/>

This webpage provides tips on checking air ducts for leaks.

[Retrieved May 11, 2019]

#### ❖ How to Repair Leaks in HVAC Ductwork

<https://www.todayshomeowner.com/video/how-to-repair-leaks-in-hvac-ductwork/>

This webpage provides a guide on repairing leaking air ducts.

[Retrieved May 11, 2019]

### Ice-Plant Refrigeration Servicing NC III

This qualification consist of competencies that a person must achieve to enable him/her to install, troubleshoot, service and maintain ICE PLANT Refrigeration units and components. It includes recovery and recycling of refrigerant from the system

#### Core Competencies:

- Survey Site for Installation of Ice Plant Refrigeration Equipment
- Install Ice Plant Refrigeration Piping System
- Install Ice Plant Refrigeration Electrical System
- Install Ice Plant Refrigeration Equipment
- Service and Maintain Ice Plant Refrigeration System
- Troubleshoot Ice Plant Refrigeration System

#### ❖ Methods of Refrigeration: Ice Refrigeration, Dry Ice Refrigeration

<https://www.brighthubengineering.com/hvac/20353-methods-of-refrigeration-ice-refrigeration-and-dry-ice-refrigeration/>

This webpage describes the processes of refrigeration as cyclic and non-cyclic that utilizes thermodynamic or non-thermodynamic in creating the cooling effect.

[Updated May 11, 2019]

#### ❖ Survey and Installation

<http://www.smartcool.com.ph/services/survey-and-installation/>

This webpage provides information on preparing a site for installation of air conditioning unit. The first step after receiving an enquiry for most air conditioning projects, in an existing building, is to undertake a site survey and meet with the prospective clients.

[Retrieved May 11, 2019]

#### ❖ Industrial Refrigeration Handbook

<https://www.accessengineeringlibrary.com/browse/industrial-refrigeration-handbook>

This webpage provides information detailing the industry changes caused by the conversion from CFCs to non-ozone-depleting refrigerants and by the development of microprocessors and new secondary coolants.

[Retrieved May 11, 2019]

#### ❖ How to Size Refrigeration System Piping

<https://www.achrnews.com/articles/88313-how-to-size-refrigeration-system-piping>

This webpage provides information on general knowledge of piping practices required to make an intelligent choice. Normally, each of the

## INTERNET RESOURCES

<ul style="list-style-type: none"> <li>• Recover And Recycle Refrigerant from Ice Plant RefrigerationSystem</li> <li>• Repair and Retrofit Ice Plant Refrigeration System and ItsAccessories</li> <li>• Perform Start-Up and Commissioning for Ice Plant RefrigerationSystem</li> </ul>	<p>system components has a stub connection of a specific pipe size. [Retrieved May 11, 2019]</p> <p>❖ <b>Block ice plant – complete ice systems</b> <a href="http://www.gearefrigeration.com/en-uk/Components/Ice-Machines/Containerized-ice-plants/Pages/container.aspx">http://www.gearefrigeration.com/en-uk/Components/Ice-Machines/Containerized-ice-plants/Pages/container.aspx</a> This webpage describes the ice making and harvesting section of the machine that produces block ice of sizes from 25 to 150 kilograms. [Updated May 11, 2019]</p> <p>❖ <b>Ice Plant Equipment</b> <a href="http://www.iceplantsequipment.com/aboutus.html">http://www.iceplantsequipment.com/aboutus.html</a> This webpage provides a background information on Gurdev Icecans Refrigeration Industries and its features. [Retrieved May 11, 2019]</p> <p>❖ <b>Ice plant refrigeration servicing NC II in the Philippines</b> <a href="http://www.courses.com.ph/ice-plant-refrigeration-servicing-nc-iii-tesda-course-philippines/">http://www.courses.com.ph/ice-plant-refrigeration-servicing-nc-iii-tesda-course-philippines/</a> This webpage provides information on Ice Plant Refrigeration Servicing NC III is a short TESDA course in the Philippines that will train you in installing, troubleshooting, servicing, and maintaining ice plant refrigeration units and components. [Updated May 11, 2019]</p> <p>❖ <b>Suggested Guidelines for Refrigeration Plant Maintenance</b> <a href="https://www.orfa.com/resources/documents/librarydocs/guides_bp/refrigeration%20Plant%20Maintenance%202004.pdf">https://www.orfa.com/resources/documents/librarydocs/guides_bp/refrigeration%20Plant%20Maintenance%202004.pdf</a> This webpage provides suggested guidelines for refrigeration plant maintenance. [Retrieved May 11, 2019]</p>
<p><b>Land-Based Transport Refrigeration Servicing NC II</b></p> <p>This qualification consists of competencies that a person must achieve to enable him/her to service, maintain, troubleshoot and repair as well as to start-up, test and commission land-based transport refrigeration systems/units.</p> <p>Core Competencies:</p> <ul style="list-style-type: none"> <li>• Service and maintain transport refrigeration units</li> <li>• Troubleshoot and repair transport refrigeration systems</li> <li>• Perform start-up, test and commissioning of transport refrigeration unit</li> </ul>	<p>❖ <b>Transport Refrigeration</b> <a href="https://www.gea.com/en/applications/transportation/transport-refrigeration/index.jsp">https://www.gea.com/en/applications/transportation/transport-refrigeration/index.jsp</a> This webpage provides information on semi-hermetic refrigeration systems mounted on trucks and trailers. [Retrieved May 11, 2019]</p> <p>❖ <b>Service and Repair Land-Based Air-Conditioning/Refrigeration System</b> <a href="https://www.ukstandards.org.uk/PublishedNos-old/LANLEO28.pdf">https://www.ukstandards.org.uk/PublishedNos-old/LANLEO28.pdf</a> This webpage provides the standard in servicing and repairing land-based air-conditioning/refrigeration systems which includes mobile air-conditioning and fixed plant refrigeration. [Retrieved May 11, 2019]</p>
<p><b>RAC (Domestic) Servicing NC II</b></p> <p>This Qualification consists of competencies that a person must achieve to enable him/her to install, service, maintain, troubleshoot and repair domestic air-conditioning and refrigeration units</p>	<p>❖ <b>Refrigeration basics: introduction to the refrigeration &amp; air-conditioning trade</b> <a href="https://www.refrigerationbasics.com/">https://www.refrigerationbasics.com/</a> This webpage provide illustrative method of presenting the topics in refrigeration technology with interactive. Graphics and logically arrange materials form a mechanic's point of view. [Updated May 11, 2019]</p> <p>❖ <b>How To: Install a Window Air Conditioner</b> <a href="https://www.bobvila.com/articles/how-to-install-a-window-air-conditioner/">https://www.bobvila.com/articles/how-to-install-a-window-air-conditioner/</a> This webpage provides a guide in installing a window-type air conditioning</p>

## INTERNET RESOURCES

### Core Competencies:

- Install domestic refrigeration and air-conditioning (DomRAC) units
- Service and maintain domestic refrigeration and airconditioning (DomRAC) units
- Troubleshoot and repair domestic refrigeration and airconditioning (DomRAC) systems

unit using basic tools.

[Retrieved May 11, 2019]

#### ❖ How to do installation and commissioning of refrigeration equipment in cold storage

<https://www.atlascocool.com/refrigeration-equipment-in-cold-storage/html>

This website provides information and guide in installing refrigeration equipment and accessories in cold storage.

[Retrieved May 11, 2019]

#### ❖ Manual for Refrigeration Servicing Technicians

[http://www.unep.fr/ozonaction/information/mmcfiles/7443-e-ref\\_manual\\_servicing\\_technicians.pdf](http://www.unep.fr/ozonaction/information/mmcfiles/7443-e-ref_manual_servicing_technicians.pdf)

This webpage presents a manual for refrigeration servicing technicians that are involved in training and organization of service and maintenance of refrigeration and air conditioning systems.

[Retrieved May 11, 2019]

#### ❖ How to Test the Start Relay of the Refrigerator Compressor

<http://refrigerationclub.com/how-to-test-the-start-relay-of-the-refrigerator-compressor/>

This website provides information and guide in testing the start relay of refrigerator compressor. Includes images and links to related topics.

[Retrieved May 11, 2019]

#### ❖ How to Repair a Refrigerator

<https://home.howstuffworks.com/how-to-repair-a-refrigerator.htm>

This webpage provides information and guide in repairing refrigeration systems at home.

[Retrieved May 11, 2019]

### RAC (PACU-CRE) Servicing NC III

This qualification consists of competencies that a person must achieve to enable him/her to install, service, maintain, troubleshoot and repair as well as to perform start-up, test and commissioning of air-conditioning and refrigeration units in commercial environment/ establishments other than centralized air-conditioning and industrial refrigeration systems.

### Core Competencies:

- Install PACU
- Install CRE
- Service and maintain PACU
- Service and maintain CRE
- Troubleshoot and repair PACU
- Troubleshoot and repair CRE
- Perform start-up, test and commissioning for PACU
- Perform start-up, test and commissioning for CRE

#### ❖ Packaged air conditioner – types of packaged AC

<http://www.brighthubengineering.com/hvac/61457-packaged-air-conditioners-types-of-packaged-ac/>

This webpage describes the package air-conditioners and other types. This includes the water-cooled condenser type, and air-cooled condenser types.

[Updated May 11, 2019]

#### ❖ Engineered Packaged Systems

<http://engpkgsys.com/index.html>

This webpage provides information about the technology behind package-type and commercial air-conditioning. The operator training and field service course provides comprehensive information and training in commercial-grade refrigeration and air-conditioning.

[Updated May 11, 2019]

#### ❖ Practical refrigeration training centre

<http://prtc.co.uk/>

This website presents an independent training company offering a wide-range of refrigeration, air-conditioning/heat pump, refrigerant handling, design and electrical courses.

[Updated May 11, 2019]

#### ❖ How to Test the Start Relay of the Refrigerator Compressor

<http://refrigerationclub.com/how-to-test-the-start-relay-of-the-refrigerator-compressor/>

This website provides information and guide in testing the start relay of refrigerator compressor. Includes images and links to related topics.

[Retrieved May 11, 2019]

#### ❖ TechniSolve software

<http://www.coolit.co.za/refri/index.htm>

This webpage introduces a software by Kotza International which is designed for interactive delivery of training for various refrigeration and air-conditioning applications. The software also provides simulation for repair, configuration and adjustment of parts to conform to various situations. Five (5) software titles including a manual are available to support training.

## INTERNET RESOURCES

[Updated May 11, 2019]

### ❖ Airedale applied thermal innovation

<http://www.airedale.com/web/Training-Events.htm>

This webpage provides courses for professional service technicians of refrigeration and air-conditioning systems. Courses offered provide optimum level of excellence in training in air-conditioning systems and operational efficiency.

[Updated May 11, 2019]

### Transport RAC Servicing NC II

This qualification consists of competencies that a person must achieve that will enable him/her to install, service, maintain, troubleshoot and repair air-conditioning and refrigeration units in transport sector.

#### Core Competencies:

- Install transport air-conditioning and refrigeration units
- Service and maintain transport air-conditioning and refrigeration units
- Troubleshoot transport air-conditioning and refrigeration systems
- Recover and recycle refrigerant in transport airconditioning and refrigeration systems
- Repair and retrofit transport air-conditioning and refrigeration and its accessories
- Perform testing and commissioning for transport airconditioning and refrigeration

### ❖ Transport refrigeration

<https://www.green-cooling-initiative.org/refrigeration-sectors/transport-refrigeration/>

This webpage provides information on transport refrigeration used primarily to transport perishable goods and supplies as part of a cold chain. Refrigerated transport increases food safety and prevents economic losses due to spoilage.

[Retrieved May 11, 2019]

### ❖ Transport refrigeration services

<https://www.reeferservicemi.com/services.html>

This website provides information on servicing transport refrigeration systems. Reefer equipment, like most mechanical equipment, needs repairs and service to maintain its proper use.

[Retrieved May 11, 2019]

### ❖ Why and How to Maintain Transport Refrigeration Units?

<http://www.aircon-training.com/>

This website provides information and guide in troubleshooting transport refrigeration units.

[Retrieved May 11, 2019]

### ❖ Refrigerant Recovery

<https://www.hvacknowitall.com/blogs/blog/187768-refrigerant-recovery#.XNuIWPZuLnM>

This website provides information and guide in recovering refrigerants from refrigeration and air conditioning units into a recovery tank.

[Retrieved May 11, 2019]

### ❖ How to Test the Start Relay of the Refrigerator Compressor

<http://refrigerationclub.com/how-to-test-the-start-relay-of-the-refrigerator-compressor/>

This website provides information and guide in testing the start relay of refrigerator compressor. Includes images and links to related topics.

[Retrieved May 11, 2019]

### ❖ Emissions of Transport Refrigeration Units with CARB Diesel, Gas-to-Liquid Diesel, and Emissions Control Devices

<https://www.nrel.gov/docs/fy10osti/46598.pdf>

This website provides information on emissions of transport refrigeration units in operation.

[Retrieved May 11, 2019]