



Invest in People the Only Asset that Appreciates...

CERTIFIED HVAC- REGRIGATION Training Program

LIVE ONLINE INSTRUCTOR LED
ONE TO ONE FACILITY AVAILABLE



BUILDING NATIONS A Professional Development Institute

This highly specialized and concentrated Program is ideally suited to following individuals who:

- A people who would like to become a professional of HVAC and Refrigeration systems.
- The people who are engaged in this profession, but not have the accredited certification can join.
- The professionals, who have sound experience and exposure, but cannot excel due to good certification, may join.

ACCREDITED FROM USA



COURSE OBJECTIVES:



HVAC and Refrigeration technician is high in demand resource in all over the world. As far as concerned the weather conditions, either cold or hot, in both ways they are most required people.

Certified HVAC and Refrigeration course in Karachi or Certified HVAC training course in Pakistan is one the state of art course highly specialized course in Refrigeration and HVAC. The course comprises and designed on the basic to advance level of tools and its techniques. They people are also in demand in industries due to manage the controlling of temperature within the vicinity.

Program Details

Inauguration

Training Program will be inaugurated by a senior member of 3DEducators

Program Structure

Details of the programs	
Number of classes in a week	1
Duration of each class	3 hours
Guided Hours	0
Non Guided Hours	0
Total Hours	36 hours

Other Learning Activities

Activities that have been required	
Classroom Assignment	1
Presentation By Trainees	1
Project	1

Program Syllabus

COURSE CONTENT:

Curriculum for HVAC Technician

Course Modules

- Module 1: HVAC Fundamentals
- Module 2: HVAC Electrical 1
- Module 3: HVAC Electrical 2
- Module 4: HVAC Systems 1
- Module 5: HVAC Refrigeration 1
- Module 6: HVAC Heating 1
- Module 7: HVAC Heating 2
- Module 8: HVAC Heat Pumps and HVACR Accessories

MODULE 1: HVAC FUNDAMENTALS

A. Fundamentals

- ☐ Introduction to the Industry
- ☐ HVACR Measurements
- ☐ Heat Energy
- ☐ Pressure
- ☐ Gas Works
- ☐ Air Works

B. Safety

- ☐ Hazard Communication Labels, Materials Safety Data Sheets, and Safety
- ☐ Training

- ☐ Personal Protective Equipment (PPE)
- ☐ Personal Safety in Confined Space and on Ladders
- ☐ Electrical Lockout/Tagout
- ☐ Fire Extinguishers and Compressed Gas Safety

MODULE 2: HVAC ELECTRICAL 1

A. Electrical, Part I

- ☐ Introduction to the Industry
- ☐ What is Energy?
- ☐ Atomic Theory
- ☐ Basic Circuits
- ☐ Parallel Circuits
- ☐ Power

B. Electrical, Part II

- ☐ Magnetism
- ☐ Alternating Current
- ☐ Loads, Resistive, and Inductive
- ☐ Capacitors
- ☐ Impedance and Power Distribution

MODULE 3: HVAC ELECTRICAL 2

A. Electrical, Part III

- ☐ Control Methods, Temperature, and Pressure
- ☐ Residential Heat/Cool Thermostats at Low Voltage
- ☐ Really Good Relay Stuff
- ☐ Contractors Go, Starters Go with Protection

- ☐ Power Wiring
- ☐ Odds and Ends around a Schematic

B. Electrical, Part IV

- ☐ Basic Electric Motor Theory
- ☐ Open and Hermetic Motors
- ☐ Capacitor Motors
- ☐ Three-phase Motors
- ☐ The Application of Electric Motors
- ☐ Diagnosing and Replacing Electric Motors

MODULE 4: HVAC SYSTEMS 1

A. Systems Properties and Measurement

- ☐ Heat Energy and Comfort
- ☐ Properties of Air
- ☐ Psychrometrics
- ☐ Total Heat in Air
- ☐ Measuring a Heavy Invisible Moving Volume
- ☐ Air Flow Measurement

B. Systems II

- ☐ Heat Loads Introduction
- ☐ Conduction Loads
- ☐ Solar Gain
- ☐ Infiltration and Ventilation Loads
- ☐ Duct Load

MODULE 5: HVAC REFRIGERATION 1

A. Refrigeration I

- ☐ Basic Refrigeration Cycle Physics
- ☐ Compression and Compressors
- ☐ Condensation and Condensers
- ☐ Expansion and Metering Devices
- ☐ Evaporation and Evaporators
- ☐ Measure the Normal Cycle

B. Refrigeration II

- ☐ Refrigerants
- ☐ Compressor Accessories and Applications
- ☐ Low side Accessories and Applications
- ☐ High side Accessories and Applications
- ☐ Piping System Sizing and Applications
- ☐ Capacity Control Methods

MODULE 6: HVAC HEATING 1

A. Oil Heat

- ☐ Characteristics of Fuel Oil and Principles of Combustion
- ☐ Types and Construction of Oil Burners
- ☐ Oil Burner Anatomy, Part One
- ☐ Oil Burner Anatomy, Part Two
- ☐ Fuel Oil Tanks and Piping
- ☐ Complete Heating System

B. Gas Heat

- ☐ Fuel Gas Composition
- ☐ Pressure Regulators, Burners, and Heat Exchangers
- ☐ Standing Pilot Systems
- ☐ Electronic Ignition
- ☐ High efficiency Furnaces
- ☐ Troubleshooting Gas Burner Systems

MODULE 7: HVAC HEATING 2

A. HVACR Boilers

- ☐ Boiler Fundamentals
- ☐ Classifying Boilers
- ☐ Combustion
- ☐ The Heat Exchanger
- ☐ Controlling Energy Sources
- ☐ Boiler Accidents and Hazards

B. Hydronics

- ☐ System Concept
- ☐ Materials and Tools
- ☐ Boilers
- ☐ Pumps
- ☐ Heat Transfer Units
- ☐ System Accessories

MODULE 8: HVAC HEAT PUMPS AND HVACR ACCESSORIES

A. Heat Pumps

- ☐ What is a Heat Pump?
- ☐ Heat Pump Installation and Quality Criteria
- ☐ The Heat Pump Cooling Mode
- ☐ The Heat Pump Heating Mode
- ☐ The Heat Pump Defrost Mode
- ☐ Heat Pump Components
- ☐ Heat Pump Troubleshooting

B. HVACR Control

- ☐ Building and HVAC Systems
- ☐ Air Circulation and Air Quality
- ☐ Control System Characteristics
- ☐ Process Characteristics and Control Systems
- ☐ Control System Components

Students who are unable to appear for the final exam are required to submit a written application stating the reason for not appearing for the exam. 3D Educators reserves the right to approve or deny such applications. If approved, the student will be allowed to sit for the exam within one month. Failure to do so, the student will be resubmit the examination fee and sit the future schedule exam. Without passing of the exams no certification will be awarded.

Live Online Class Facility Available

INSTRUCTIONS

- ❖ Instructor Led Training
- ❖ Real Time Presentations available at our official website of 3D EDUCATORS
- ❖ Interactive Classes
- ❖ Complete Notes and Other Stuff shall be provided through our Secure Student Login Member's Area
- ❖ For Online Live Classes, you may please download the Admission Form through our website <http://www.3deducators.com>. Fill it properly and attached the required document along with Picture and send back to info@3deducators.com with scanned fee submitted voucher in the bank.
- ❖ For Pakistan you may submit the fee at any MCB Branch with the title of "3D EDUCATORS-TRAINERS & CONSULTANTS".
- ❖ If you are outside Pakistan then you may transfer via Bank to Bank or any western union, Fast Track, Money Gram or else International Transfer Body.
- ❖ After Admission, if you don't have GMAIL Account then you are requested to kindly make one GMAIL Account and shared it info@3deducators.com. Then further correspondence shall be made by our institute official.
- ❖ Extra Bandwidth Charges shall be incurred.
- ❖ If you are outside country or city then extra courier charges shall be incurred for Certificate.
- ❖ Medium shall be used gotomeeting.com

IMPORTANT INSTRUCTIONS FOR LIVE CLASSES

- ❖ During Classes, you are requested to make sure that you are in isolated room, where you should be there except your voice.
- ❖ Kindly Switch Off your Cell Phone during the class, because it will disturb the quorum of class.
- ❖ If you have taken the admission in the course online, ethically it is recommended and suggested that you only avail this facility.
- ❖ Recording of Lectures are not allowed at your end.

This world is emerging and growing in the 21st Century very rapidly because of latest and remarkable technologies and its advancement. Due to advancement of technology, we 3D EDUCATORS offer Live Interactive class sessions. 3D EDUCATORS believe on Information Technology and its systems. Now you can also avail this facility at your home.

JOIN US FROM ANYWHERE

Call: 9221-34141329, 9221-34857148

Cell: 0333-2402474

Cell: 0322-2083032

Contact: info@3deducators.com

Web: <http://www.3deducators.com>

Admission Form: [Admission Form](#) (Press Control to download)

MANAGEMENT

3D EDUCATORS – TRAINERS & CONSULTANTS

TERMS & CONDITIONS

WITHDRAWAL FROM THE CERTIFICATION OR DIPLOMA

Students are not allowed to withdraw from the CERTIFICATION/DIPLOMA. If a student cannot continue the CERTIFICATION his/her fee will be forfeited.

CONDUCT AND DISCIPLINE

A disciplinary action, leading to rustication, will be taken against students whose conduct is found objectionable at any time during the course of study. Reference will be made to 3D Educators code of conduct.

EVALUATION AND GRADING

The performance of students is evaluated through continuous observation of a student's performance in the CERTIFICATION/DIPLOMA – class participation, submission of assignments, quizzes and exercises.

The student will be examined through three hourly exams conducted at the midterm and a final exam at the end of the program. Total marks for passing the CERTIFICATION/DIPLOMA will be 70 out of a total of 100.

Students who do not meet the attendance or any other eligibility criteria will not be allowed to appear in the final examination.

The following grading plan will be applicable for the CERTIFICATION/DIPLOMA:

A	87 - 100
B+	81 - 86
B	72 - 80
C+	66 - 71
C	60 - 65
F	below 60

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Global Recognized Certification from IMRTC USA

**CERTIFICATE
OF EXCELLENCE**

IMRTC USA Recognized

CERTIFICATION



This is to Certify That
Mr. Danny Jones Wales
*has successfully met the certification requirements as outlined in
IMRTC content and the policies adopted thereunder, hereby grants the certification of*

Certified HVAC

Student ID: IM864532201

Date of Commencement: May 4, 2014

Date of Ending: July 4, 2014



Cheryyel Rhodes

Principal of Institute

Director Affiliations and Official Affairs

INTERNATIONAL MANAGEMENT RESEARCH & TECHNOLOGY CONSORTIUM

IMRTC - UNITED STATES OF AMERICA - <http://www.imrtc.org>

Chapter ID: AS2933770
Partnership ID: AS5588322_Pakistan
Verification@imrtc.org

Certificate of Authorization from IMRTC USA

CERTIFICATE
OF AUTHORIZATION

IMRTC USA Recognized

CERTIFICATE OF AUTHORIZATION



IMRTC
International Management
Research & Technology Consortium

This is to Certify That IMRTC Authorized

3D EDUCATORS - TRAINERS & CONSULTANTS
*to work as Training & Research Partner in capacity of
PARTNER THROUGH PAKISTAN CHAPTER
for the scope of activity shown below in accordance with the applicable rules of
the IMRTC. The use of this certification and the authority granted by this
Certificate of Authorization are subject to the provision of agreement set
forth in the application.*

*The validity of this certificate is for Five Years from the date of Issuance
and will increase according to the performance
Issuance Date: 16 May 2014*

Cheryyel Rhodes

Director Affiliations and Official Affairs



Chapter ID: AS2933770

Partnership ID: AS5588322_Pakistan

Partnerships@imrtc.org

INTERNATIONAL MANAGEMENT RESEARCH & TECHNOLOGY CONSORTIUM
IMRTC - USA, <http://www.imrtc.org>