

# DCT Data Center Cooling

Duration: 5 Days

Course Code: DCT-DC-COOL

## Overview

The DCT Data Center Cooling course, covers the mechanical cooling systems that support data centers and prevent them from overheating. As the data center power and density has increased every year, the need to remove the heat generated has become a more important factor for the design and operation of the facility.

## Target Audience:

- Architects
- Engineering design professionals
- Facilities operations
- Contractors
- Technicians
- Mechanical engineers

## Objectives:

- Introduction to data center cooling and mechanical systems.
- Redundancy concepts for mechanical and cooling systems.
- Understanding of mechanical & plumbing systems and control.
- How differing priorities, locations, and more change the cooling design.

## Pre-requisite

- Basic understanding of data centers, layouts, and common terms.

## Course Outline ( Includes DCT Essentials )

- Introduction: Concepts, definitions
- The need for cooling
- Heat Transfer
- Heat gains
- Temperature and humidity requirements
- Ventilation rates
- Air quality
- Cooling loads
- HVAC equipment
- Data center cooling systems
- Basics of how cooling systems work
- operating conditions - the typical mechanical terms, cooling operations, and redundancy levels
- Air cooling solutions - air cooling and operating parameters for typical datacenters
- Computational Fluid Dynamics - what it is, how these tools are used, and what to look for when analyzing a data center flow model
- Types of Datacenter cooling systems
- Air Cooling
- Direct Liquid Cooling
- Cooling Equipment types
- Direct Expansion Systems relationship
- Chiller based cooling
- Air management and control systems
- Raised Floor cooling
- Non-raised floor cooling
- Aisle containment
- Hot aisle
- Cold aisle
- Operating the data center cooling systems
- Reliability and Risk mitigation
- Recommendations and Best practices
- Measuring, monitoring, and routine checks
- HVAC efficiency and Power Usage Effectiveness (PUE) relationship