

# DCT STRUCTURED CABLING COPPER & FIBRE OPTICS

**COURSE CODE: DCT - INFR- SC**

## About this course

DCT Structured cabling is a unique Multi-vendor course that introduces Structured Cabling standards for both Copper & Fibre installations. The class-based training offers advanced hands on experience labs to prepare students for any deployment scenarios for structured cabling. It's a three-day course (Day1- Copper cabling systems, Day2- 4Fibre cabling systems and Day 5-Labs and Exam.

## Objective

Delegates are equipped with the knowledge, skills and expertise to competently undertake the installation of the Structured Cabling Solutions

## Course Pre-requisite

Those attending this course require basic understanding of network topology

## Labs

Terminations, Troubleshooting and testing on:

- Category 6 UTP Cabling system
- Category 6A FTP Cabling system
- Trouble shooting and Testing of both Cat 6 and Cat 6A cabling
- Fibre Field terminations
- Fibre splicing
- Fibre Trouble shooting and Testing

## Certificate

- Giganet Certified Installer
- Siemon RI (Registered Installer)
- DCT Certified Installer

## Course Outline

### COURSE CONTENT- COPPER

#### Introduction to Balanced Twisted-Pair Cables

#### Connecting Hardware

- Telecommunications Outlets
- Patchpanels
- Wiring Blocks

#### Networks

- Local and Wide Area Networks
- Pros and Cons of a Network
- Network Topologies
- Generic (Structured) Cabling

#### Cabling Standards

- ANSI/TIA/EIA Standards
- ISO/IEC Standards
- CENELEC Standards
- Cable Categories

#### Horizontal Cabling

- Horizontal Channels
- Channel Lengths
- Horizontal Pathways
- Maximum Pathway Fill

#### Backbone Cabling

- Backbone Cabling Systems
- Backbone Cabling Distance Limitations

#### Work Area Cabling

- Work Area Components
- Telecommunications Outlets
- Work Area Cable Termination

#### Telecommunications Spaces

- Equipment Rooms
- Telecommunication Rooms
- Entrance Facilities

#### Electromagnetic Interference (EMI)

## Content fiber optics

### Introduction to Fibre Optics

- What are Optical Fibres?
- Optical Fibre Construction
- Fibre Sizes

### Optical Fibre Transmission

- Fibre optic transmission systems and data links
- Transmitting and receiving devices
- Transmission over different types of fibre
- Electromagnetic Spectrum and Wavelengths
- Fibre Optic Transmission Windows

### Fibre Optic Cable Construction

- Loose-Tube and Tight Buffered
- Simplex and Duplex
- Distribution and Break-out cables
- Indoor/Outdoor
- Self-supporting
- Armoured

### Fibre Splicing and Terminating

- Mechanical and Fusion Splicing
- Types of fibre connector
- Hot and Cold Cure Termination
- Mechanical Termination

### Fiber Connector Types (Styles)

- Flat Fiber Connector
- PC Fiber Connector
- UPC Fiber Connector
- APC Fiber Connector

### FIBER OPTICS CONTENT

#### Inspecting and Cleaning Optical Fiber

#### Connectors

- Core alignment.
- Physical contact.

- **EMI** – Pristine connector interface

• **Power Separations Signal Degradation**

**Installation Practices** – Dispersion

- Cable Management – Attenuation
- Bend Radius – Scattering
- Cable Stacking Height – Absorption
- Cable Stress – Factors Affecting Splice Points
- Cable Support

**Designing Fibre Optic Cabling in the Local Area Network**

- Rack Clearance
- Equipment Locations – Fibre vs Copper
- Mounting Connecting Hardware – Fibre in the LAN
- Earthing And Bonding – Channel Classifications
- Cable Pulling – Channel Attenuation
- Cable Termination – Optical Fibre Categories

**Testing** – Fibre Cable Classifications

- Permanent Link Testing – Fibre Channel Lengths
- Channel Testing – Optical Fibre Applications
- Test Parameters – Fibre Cabling Design

**Administration** – Fibre in the Work Area

- Labels

**Fibre Optic Safety**

- Records – Chemical Hazards
- Administration Classes ( 1-4) – Optical Hazards

**Warranties – Fibre Fragments**

- Test Results – Environment
- Warranty Registration Form

– Safety for Everyone

**Fibre Optic Cable Installation**

- Conduct a thorough site survey prior to cable placement.
- Develop a cable-pulling plan.
- Follow proper procedures.
- Do not exceed cable minimum bend radius.
- Do not exceed the cable maximum recommended load.
- Document the installation.

**Fibre Optic Testing**

- Types of tests required
- Flashlight and Visual Fault Locator
- Fibre Microscope
- Attenuation testing using Light Source and Power Meter
- Channel Attenuation Calculation
- Optical Time Domain Reflectometer

**Fiber Troubleshooting**

- Verifying the problem.
- Isolating the source of the problem.
- Repairing the problem.

– Testing the repaired system to ensure that it functions correctly.