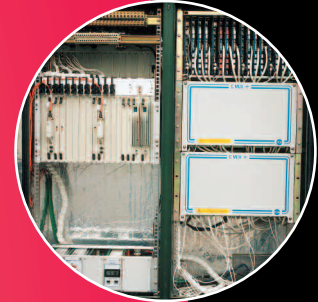


NG-SDH

Synchronous Digital Hierarchy

The emergence of the next generation Internet and an ever increasing demand for national and international bandwidth, has resulted in the development and build of high capacity data transport networks. Our unique SDH courses are the most technically equipped in the UK and the five-day course enables practical hands-on training. You will install, commission, operate and fault find on STM 1 and STM 4 systems as used by major telecomms operators.



Add and Drop
Multiplexer



Exchange Switching
Systems



Digital Multiplexing
Techniques



DWDM, WDM Transmissions

Five day course including practical hands on training

Module 1

Understanding the origins of Synchronous Digital Hierarchy system and its advantages over other existing systems

- What is Plesiochronous Digital Hierarchy (PDH) and its relationship with SDH
- PDH Multiplexing
- Time Division Multiplexing and its relationship to SDH (in summary)
- PDH Limitations

Module 2

Introduction to SDH, how it works and what the network is used for

- Comparisons between PDH and SDH
- Synchronisation within an SDH Network
- Ratification and ITU-T standards for SDH
- International Synchronous Networks Comparison
- SDH Multiplexing Structure

Module 3

SDH Equipment, how we can configure them and the way we can utilise different Network Topologies

- The different types of SDH equipment and their component parts
- Types of customer traffic and network interfaces
- The different types of Network Element configuration and their uses
- The different types of Network Topologies

Module 4

Discover the SDH Multiplexing Principles and Techniques used to maintain and monitor

- SDH Multiplexing Hierarchy
- Multiplexing and Mapping of Customer Traffic at the 4 levels of SDH Hierarchy including Overheads and Pointers
- SDH Frame Structure including Section Overheads
- Concatenation at AU4 level

Module 5

Methods of Synchronisation within the SDH Network

- Synchronisation Sources and ITU-T standards
- Network Synchronisation methods
- Synchronisation working modes
- SDH Equipment Timing Sources
- Reference selection, Timing distribution and Sync Trails

Module 6

Protection Schemes employed within the SDH Network

- Hardware and Database Protection Options
- Multiplexer Section Protection (MSP)
- Sub-Network Connection Protection (SNCP)
- Dedicated Protection Ring (DPRing)
- Multiplexer Section Shared Protection Ring (MS-SPRing)

Module 7

Network Management, why we need a management system and how we achieve communications and control

- Network Management responsibilities
- Network Management Platforms
- Data Communications network within an SDH network

Module 8

An introduction into the different types of network elements used to populate an SDH network

- STM-1 Add and Drop Multiplexer (ADM)
- STM-4 Add and Drop Multiplexer (ADM)
- STM-16 Add and Drop Multiplexer (ADM)
- STM-64 Add and Drop Multiplexer (ADM)
- Digital Cross-Connect (DXC)

Module 9

An introduction to Wavelength Division Multiplexing (WDM) and Dense Wavelength Division Multiplexing (DWDM)

- What is WDM and DWDM
- Advantages and disadvantages of WDM over SDH
- Why use WDM and DWDM
- ITU-T recommendations for WDM
- WDM versus DWDM

Module 10

Next Generation SDH

- Link Capacity Adjustment Scheme
- Generic Framing Procedure
- Virtual Concatenation

You will gain a theoretical understanding of SDH, PLUS

Technical Module

Layout and Placement
Connection and Termination
Fibre Splicing:
(for those with no prior experience)

Preparation Module

Tooling
Clothing and PPE
Planning
Documentation
Lifting and Handling
Health, Safety and Environment
Laser Safety

Installation Module

Team working
Site Planning
Building the Racks
Wiring the Subracks and Matrices
Power Cabling
Checking Completed Work
Site Departure

Commissioning Module

Equipment Introduction
System O&M (Operations & Maintenance) Manuals
Applications and Facilities
Local Terminal Operator Control
Local Terminal Exercise
Commissioning using the Local Terminal Ring & Spur Network Application Exercise
Design and Implementation
Optical Measurements

Operations Module

Alarm Identification and Priorities
Use of Network Element Manager
Fault Finding Techniques
Card Replacement
Simulated Fault Exercise

Theory Tests

Bring together all theoretical aspects of the modules into a multi-choice test and a case study.

Practical Tests

Build a complete set of equipment fulfilling technical and QA requirements to include hand over to a "Client Operator."

Complete a fault-finding programme and for each fault identify the fault, correct it and explain the consequences of the fault remaining unrectified.

CTTS Ltd

The National Training Centre,
Jubilee Place, Lindum Business Park,
Station Road, North Hykeham,
Lincolnshire LN6 3QX UK
T: +44 (0)1522 880900
F: +44 (0)1522 880901
E: info@cable-training.co.uk
www.cable-training.co.uk