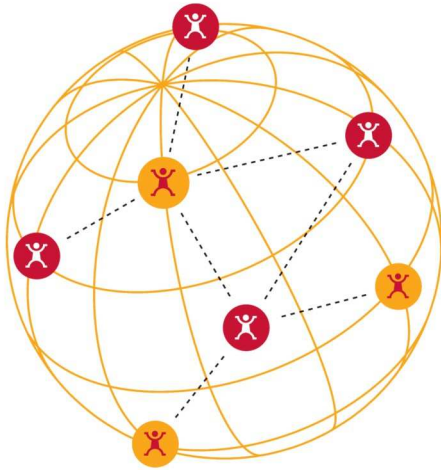


TRAINING PROGRAM OUTLINE



ENG-301E PDH & SDH DIGITAL TRANSMISSION

DESCRIPTION

A 5-day Training Program to provide participants with an understanding of the Plesiochronous Digital Hierarchy (PDH) transmission and its limitations with respect to the Synchronous Digital Hierarchy (SDH) transmission. A brief description of SONET (Synchronous Optical NETwork) is included, as well as differences between SDH and SONET.

OBJECTIVES

- Provide an overview of the evolution of telecommunications as well as a review of its basic principles
- Describe the structure of PDH, SDH and SONET as well as their network architecture including customer, loop and office equipment
- Present the limitations of PDH
- Provide an overview of different facilities of SDH
- Give a description of SONET



- Explore the new life for legacy SDH network by explaining the Generic Framing Procedure (GFP), the virtual concatenation and the Link Capacity Adjustment Scheme (LCAS)

TOPICS

Part 1: Introduction

- Evolution of telecommunications
- Review of telecommunications fundamentals
 - Bandwidth and capacity
 - Encoding/decoding
 - Modulation/demodulation
 - Multiplexing/demultiplexing
 - Synchronous and asynchronous transmission

Part 2: Plesiochronous Digital Hierarchy (PDH)

- PDH multiplexing structure
 - T1
 - E1
 - DS3
- PDH network architecture
 - Customer equipment
 - Loop equipment
 - Office equipment

- PDH limitations

Part 3: Synchronous Digital Hierarchy (SDH)

- SDH multiplexing structure
 - Containers and Virtual Containers (VC)



- SDH frame
 - Section overhead
 - Administrative Units (AU)
 - Tributary Units (TU)
 - Synchronous Transport Module-N (STM-N)
 - Higher level multiplexing
- Synchronized Optical Network (SONET) multiplexing structure
 - Tributaries and Virtual Tributaries (VT)
 - Synchronous Transport Signal-N (STS-N)
 - Synchronous Payload Envelope (SPE)
 - Optical Carrier (OC) level
- SDH facilities
 - Network topologies
 - Equipment
 - Synchronisation
 - Protection switching
 - Alarm structure
 - Performance monitoring
 - Network management
- New life for legacy SDH networks
 - Generic Framing Procedure (GFP) - mapping broadband data onto SDH frame
 - Virtual concatenation - splitting bandwidth into logical groups to support the transport of variable bit data streams
 - Link Capacity Adjustment Scheme (LCAS) - providing bandwidth-on-demand capability for data

TARGET AUDIENCE

- Telecommunications managers and personnel responsible for the planning, design, implementation, management and maintenance of digital transmission systems
- Managers looking to complement their skill-set by gaining a good understanding of PDH and SDH transmission as well as SONET



METHODOLOGY

Our Training Programs combine expert presentations, workshops, case studies and discussions on real-life situations faced by participants. Complete training material is provided to all participants for future reference and follow-up action plans.

LOCATION

Our Training Programs are held at regular intervals in selected cities around the world. Upon request, our expert trainers can lead Training Programs at the location of your choice. If interested, please contact us at training@neotelis.com.

EXPERTISE

Neotelis provides consulting and training services to telecommunications organizations worldwide. Its team of experts has trained thousands of executives and managers working for operators, regulators, policy-makers and governments in over 100 countries around the world.

