# Network Fundamentals

**Course Length**: 2 days

**Description:** This course gives the student the necessary knowledge needed to understand the fundamentals of today's wireline network. Concepts and terms common in the Public Switched Telephone Network (PSTN) are explained. We also explore issues related to how these networks interconnect to other providers. Lastly, the course looks at the technology driving today's networks and how that technology is deployed.

**Course Outline:**

- **Introduction to Communications**
  - ✓ Background
  - ✓ Numbering plans and the North American Numbering Plan (NANP)
  - ✓ Local Access and Transport Areas (LATA)
  - ✓ Components of a telephone network
  - ✓ How a basic network operates

- **Today's Network**
  - ✓ Switches, end offices, tandems and Operator Services Systems
  - ✓ Trunks
  - ✓ Interexchange carriers and Points of Presence
  - ✓ Routing
  - ✓ Introduction to billing and billing systems

- **Distribution**
  - ✓ Feeder and distribution plants
  - ✓ Digital Loop Carrier
  - ✓ Fiber-in-the-Loop
  - ✓ Digital Subscriber Lines (DSL)

- **Network Services and Architectures**
  - ✓ Common Channel Signaling (CCS) and the SS7 protocol
  - ✓ CLASS Services
  - ✓ Alternate Billing Service (ABS)
  - ✓ Toll-Free Database Service
  - ✓ Advanced Intelligent Network (AIN)
  - ✓ Integrated Services Digital Network (ISDN)
  - ✓ Public Packet Switched Service
  - ✓ Asynchronous Transfer Mode (ATM)
  - ✓ Frame Relay
  - ✓ Switched Multi-Megabit Data Service (SMDS)
  - ✓ Synchronous Optical Network (SONET)
  - ✓ Dense Wavelength Division Multiplexing (DWDM)
  - ✓ Enhanced 911 (E911)
  - ✓ Number Portability

- **IP Networks, Wireless Networks and Next Generation Networks**
  - ✓ IP networking and protocols
  - ✓ IP addressing and routing
  - ✓ Cellular and PCS – Services and architectures
  - ✓ Architectures and service providers
  - ✓ Next Generation architecture and services

Exercises are provided throughout the course, reinforcing a practical understanding of the material.

**What You Will Learn:**  You will learn what makes up today's telephony network.  Starting from an historical perspective, you will gain an understanding of how the telecom industry has evolved into what it is today.  In addition, you will understand how today's many networks need to communicate with each other to carry voice, data and video.

**Who Will Benefit From This Course:**  This course will be valuable for engineers, managers, sales people, technicians and anyone requiring a basic knowledge of the telephone industry. People new to telecommunications or those with changing responsibilities within the telecom industry would also benefit.

**Course Prerequisites:**  None

**Instructors:**  All of our instructors have years of experience developing and teaching technical courses at Telcordia Technologies (Bellcore) Learning Services in Lisle, IL.  They are all SS7 certified and CompTIA CTT+ Certified Professionals.

*\* This course is provided through special agreement with Telecom Training Associates, Inc.*