

## Course Description

This 3-Day Hands-On course is a must for persons entering the field of telephone communications. In the first part of this course, students will learn about basic electricity/electronics as it applies to telecommunications and basic telephony terms and concepts commonly used in the field today. In addition, the student will learn the basic components of the telephone network from the customer equipment to the outside plant, central office and the toll network.

The second portion of this course expands from the basics learned in the first part and covers digital switching, digital T1 and T3 systems, fiber optics and special circuits.

Each student will have Hands-On training in basic meter reading, running jumpers, circuit testing and trouble isolation.

## Students Will Learn

- Network Overview
- AC/DC and Series/Parallel Circuits
- Ohms Law
- Telephone System Components
- Outside Plant
- Central Office and Switching
- Bonding & Grounding and Protection
- Special Circuits
- Analysis and Problem Solving
- Provisioning & Maintenance
- And More

## Target Audience

Anyone entering the telephone, communications, electrical and/or similar industry.

## Prerequisites

None.

## Course Outline

### Module I: Basic Electrical Principles

- Basic electrical concepts
- Series and parallel circuits
- AC and DC
- Voltage, Current, and Resistance
- Ohm's Law
- Inductance, Capacitance and Impedance

### Module II: Basic Telephony (POTS)

- Analog Voice Frequency
- Basic telephone set operation
- Tip and Ring cable pair
- Basic Central Office
- Dial pulses and DTMF
- NID (Network Interface Device)
- Inside wiring and phone jacks
- Cable construction
- Cable pair color code
- Aerial plant, closures and drops

- Buried plant, pedestals and buried drops
- Load Coils
- Remotes, remote terminal pair gain equipment
- Main Distributing Frame and vault

### Module III: Bonding & Grounding and Protection

- Basic concepts and code requirements
- At the customer premise
- In the outside plant
- In the central office

### Module IV: Digital Transmission

- Basic T1/DS1 concepts
- Channel bank operation
- T1 span lines
- DSX-1 crossconnects and DACS
- T3/DS3 concepts
- Multiplexers
- Digital Switches
- Toll Network and SS7

### Module V: Fiber Optics

- Fiber optic principles
- Fiber optic cable
- Fiber optic terminals
- Ring network technology

## Module VI: Special Circuits

- Analog data circuits: 2.4, 9.6, 19.2
- Digital data circuits: DDS: 2.4, 9.6, 19.2, 56k, 64k
- HiCaps: T1 and T3
- DSL
- ATM and Frame Relay

## Delivery Method

Instructor led with numerous Hands-On labs and exercises.

## Equipment Requirements

(This apply's to our hands-on courses only)

BTS always provides equipment to have a very successful Hands-On course. BTS also encourages all attendees to bring their own equipment to the course. This will provide attendees the opportunity to incorporate their own gear into the labs and gain valuable training using their specific equipment.

## Course Length

3 Days