



## ET 2.0: Telecommunications Technical Curriculum (TTC) Program 2: General Telecommunications Knowledge Course 1: Information and Transmission Concepts

### PROGRAM OVERVIEW

The ExperTech 2.0 series is a library of CD-ROM or intranet-based products covering key communications topics. Seminar style presentations provide telecom professionals with easy access to the information they need. Topics are presented by Hill Associates instructors renowned for their technical expertise, industry experience, and outstanding presentation style.

The *Telecommunications Technical Curriculum (TTC)* has a total of five programs, each of which consists of one or more courses. TTC is a modular, yet comprehensive program designed around the needs of those who want the details but cannot attend a more traditional classroom-based, leader-led program.

*Program 2: General Telecommunications Knowledge* is a three course series that deals with general concepts and terminology related to the information representation and transmission. In this first course, *Information and Transmission Concepts*, you will explore the use of bits to represent information, transmission media options, the distinction between analog and digital transmission, modulation techniques, types of transmission impairment, issues that determine maximum bit rates for a transmission facility, multiplexing techniques, and options for network topologies.

*Program 2, Course 1: Information and Transmission Concepts* runs 95 minutes, and includes eight lessons of audio, interactive elements, review slides, section knowledge checks and a final exam. The participant can expect to spend about twice this amount of time to complete the course.

This program has three primary objectives:

- Explain how various types of information can be represented and transmitted in both analog and digital systems across various media
- Identify several modulation techniques and their challenges
- Differentiate among five network topologies

Specific topics can be developed, or packaged together to create a unique and customizable curriculum. All of our standard titles are available for preview at our store ([www.hill.com/store](http://www.hill.com/store)).

#### About Hill Associates

At Hill Associates, we excel at creating custom talent development programs. Our experts help identify and assess your needs, and create training and educational programs that exactly meet those needs. Though we specialize in information technology, we've strengthened companies and organizations in a wide range of industries for over 25 years. Let us help you create a world-class talent development program that moves your business forward.

### PROGRAM OUTLINE

#### Lesson 1: Information Representation

- Explore the concept of a bit and how bits can be used to represent numbers, text, voice, video, and images

#### Lesson 2: Transmission Media

- Classifying various media (twisted pair, coaxial cable, optical fiber, wireless)

#### Lesson 3: Transmission Concepts

- Comparing analog and digital transmission systems

#### Lesson 4: Modulation Concepts

- Using analog and digital systems to carry bits
- Discuss ASK, PSK, FSK, QAM, TCM, 2B1Q, AMI, and Manchester encoding

#### Lesson 5: Transmission Impairments

- Differentiating between noise and distortion with examples

#### Lesson 6: Bandwidth Issues

- Principles governing maximum transmission rate within a channel (Shannon and Nyquist)

#### Lesson 7: Multiplexing

- The importance of muxing
- Types (FDM, TDM, CDM)

#### Lesson 8: Network Topologies

- Examines the five common types (ring, bus, tree, point-to-point, star)