



*This is to certify that
Chris FitzGerald
has completed the course
Wireless Communication Basics - 21927_eng
on
9/20/07*



Association for
Computing Machinery

Advancing Computing as a Science & Profession



Wireless Communication Basics

About This Course

Overview/Description

To discuss the development and functionality of wireless communication.

Target Audience:

Technical professionals; IT and business managers who need to learn about current and future mobile wireless technologies; students studying or researching wireless communications and cell-phone technologies.

Requires an understanding of computers and the basic concepts of data communications.

Certification:

No Certifications for this Course.

Expected Duration:

1 Hours 40 Minutes

First publication date:

This course was released June 12, 2001.

Last revision:

This course was last updated October 07, 2005.

Course Number:

21927_eng

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Wireless Communication Basics

Course Objectives

| Topic Name | When you have completed this topic, you should be able to |
|------------------------------|--|
| Introduction to wireless | outline the history of radio and describe the major developments that are occurring in the wireless environment. |
| The frequency spectrum | explain radio waves, propagation, and frequency allocation. |
| Modulation techniques | define and discuss the various types of modulation. |
| Multiplexing | define and describe the major multiplexing techniques used in wireless communication. |
| Transmission means | explain the basics of spread-spectrum technology and discuss the two main spread-spectrum techniques. |
| Cellularization | explain the basic principles of cellular radio and outline how it operates. |
| Packet and circuit switching | explain packet and circuit switching, and describe the differences between connection-oriented and connectionless communication. |

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Wireless Communication Basics References

Books

Fundamentals of Telecommunications

1999, Roger L Freeman, John Wiley & Sons, 0471296996

Introduction to Wireless Local Loop: Broadband and Narrowband Systems

2000, William Webb, Artech House, 1580530710

Mobile Data and Wireless LAN Technologies

1997, Rifaat A. Dayem, Prentice Hall, 0138390517

Wideband CDMA for Third Generation Mobile Communications

1998, Tero Ojanpera and Ramjee Prasad, Prentice Hall, 089006735X

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*This is to certify that
Chris FitzGerald
has completed the course
1G and 2G Communication Systems - 21929_eng
on
12/23/07*



Association for
Computing Machinery

Advancing Computing as a Science & Profession



1G and 2G Communication Systems

About This Course

Overview/Description

To discuss the history, development, and functionality of GSM, IS-136, and IS-95 telecommunications technology.

Target Audience:

Technical professionals; IT and business managers who need to learn about current and future mobile wireless technologies; students studying or researching wireless communications and cell-phone technologies.

Requires an understanding of computers and the basic concepts of data communications.

Certification:

No Certifications for this Course.

Expected Duration:

4 Hours 40 Minutes

First publication date:

This course was released June 12, 2001.

Last revision:

This course was last updated October 10, 2006.

Course Number:

21929_eng

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1G and 2G Communication Systems

Course Objectives

| Topic Name | When you have completed this topic, you should be able to |
|--|--|
| Analog cellular systems | explain the key components of analog cellular systems. |
| GSM overview | describe the development of GSM telecommunications technology and outline some of the advantages of GSM. |
| GSM network architecture | describe the components of GSM network architecture. |
| Technical functions and protocols | explain the technical functions and major protocols and of GSM. |
| Services over GSM | describe the major services available to GSM users. |
| GSM security | explain how security is implemented in the GSM system. |
| The evolution of GSM | outline the major developments occurring in the world of GSM. |
| IS-136 development | describe the components of a cellular radio system and outline the history and major functions of AMPS. |
| Analog versus digital systems | describe and discuss the major differences between analog and digital systems. |
| Fundamentals of TDMA | describe the fundamentals of TDMA technology. |
| Digital control channels | explain the major types of digital control channels used in IS-136 systems. |
| IS-136 network architecture | provide an overview of IS-136 network architecture, components, and associations. |
| TDMA cell phones | describe and discuss the functionality and features of TDMA cell phones. |
| IS-136 features | outline the various voice and data features of IS-136. |
| The evolution of TDMA | outline the major developments occurring in the world of IS-136. |
| Developments leading to IS-95 | describe the development of IS-95 telecommunications technology. |
| CDMA | explain the basics of CDMA and describe the function of CDMA coded channels. |
| CDMA network architecture | describe the major components and workings of CDMA network architecture. |
| CDMA cell phones | describe and discuss the functionality and features of CDMA cell phones. |
| IS-95 features | describe and discuss the major features of IS-95 technology. |
| The evolution of CDMA | discuss the evolution of IS-95 into a third generation telecommunications technology. |
| Exploring wireless solutions - from 2G to 3G | discuss 2G wireless technology and outline its implications for 3G development. |

1G and 2G Communication Systems References

Books

CDMA IS-95 for Cellular and PCS

1999, Lawrence, McGraw-Hill, 0070270708

Fundamentals of Telecommunications

1999, Roger L Freeman, John Wiley & Sons, 0471296996

Introduction to Wireless Local Loop: Broadband and Narrowband Systems

2000, William Webb, Artech House, 1580530710

IS-136 TDMA Technology, Economics and Services

1998, Lawrence J. Harte, Adrian D. Smith, and Charles A. Jacobs, Artech House, 0890067139

IS-95 CDMA and CDMA 2000

2000, Vijay K. Garg, Prentice Hall, 0130871125

Mobile Data and Wireless LAN Technologies

1997, Rifaat A. Dayem, Prentice Hall, 0138390517

WCDMA for UTMS: Radio Access For Third Generation Mobile Communication

2000, Harri Holma and Toskala Antti, John Wiley & Sons, 0471720518

Wideband CDMA for Third Generation Mobile Communications

1998, Tero Ojanpera and Ramjee Prasad, Prentice Hall, 089006735X

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*This is to certify that
Chris FitzGerald
has completed the course
2.5G Communication Systems - 21935_eng
on
12/25/07*



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2.5G Communication Systems

About This Course

Overview/Description

To discuss the history, development, and functionality of GPRS, HSCSD, and 2.5G CDMA telecommunications technologies.

Target Audience:

Technical professionals; IT and business managers who need to learn about current and future mobile wireless technologies; students studying or researching wireless communications and cell-phone technologies.

Requires an understanding of computers and the basic concepts of data communications.

Certification:

No Certifications for this Course.

Expected Duration:

1 Hours 05 Minutes

First publication date:

This course was released June 12, 2001.

Last revision:

This course was last updated August 10, 2005.

Course Number:

21935_eng

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2.5G Communication Systems

Course Objectives

| Topic Name | When you have completed this topic, you should be able to |
|---------------------------|--|
| Fundamentals of GPRS | discuss the fundamentals of GPRS technology. |
| GPRS network architecture | describe the major components and workings of GPRS network architecture. |
| New functionality | describe the features of GPRS mobile terminals and discuss GPRS evolution to third-generation telecommunications technology. |
| HSCSD | describe the features of HSCSD mobile terminals and discuss HSCSD evolution to third-generation telecommunications technology. |
| 2.5G CDMA | discuss the evolution of CDMA technology. |

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2.5G Communication Systems References

Books

CDMA IS-95 for Cellular and PCS

1999, Lawrence, McGraw-Hill, 0070270708

Fundamentals of Telecommunications

1999, Roger L Freeman, John Wiley & Sons, 0471296996

Introduction to Wireless Local Loop: Broadband and Narrowband Systems

2000, William Webb, Artech House, 1580530710

IS-136 TDMA Technology, Economics and Services

1998, Lawrence J. Harte, Adrian D. Smith, and Charles A. Jacobs, Artech House, 0890067139

IS-95 CDMA and CDMA 2000

2000, Vijay K. Garg, Prentice Hall, 0130871125

Mobile Data and Wireless LAN Technologies

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WCDMA for UTMS: Radio Access For Third Generation Mobile Communication

2000, Harri Holma and Toskala Antti, John Wiley & Sons, 0471720518

Wideband CDMA for Third Generation Mobile Communications

1998, Tero Ojanpera and Ramjee Prasad, Prentice Hall, 089006735X



*This is to certify that
Chris FitzGerald
has completed the course
3G Communication Systems - 21933_eng
on
12/25/07*



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3G Communication Systems

About This Course

Overview/Description

To describe and discuss various third-generation telecommunications technologies, including W-CDMA, EDGE, and cdma2000.

Target Audience:

Technical professionals; IT and business managers who need to learn about current and future mobile wireless technologies; students studying or researching wireless communications and cell-phone technologies.

Requires an understanding of computers and the basic concepts of data communications.

Certification:

No Certifications for this Course.

Expected Duration:

1 Hours 15 Minutes

First publication date:

This course was released June 12, 01.

Last revision:

This course was last updated February 18, 2004.

Course Number:

21933_eng

3G Communication Systems

Course Objectives

| Topic Name | When you have completed this topic, you should be able to |
|---|---|
| Background and standards development | describe the development and evolution of third-generation systems and standards. |
| 3G applications and services | discuss the major applications and services available that use 3G technology. |
| W-CDMA | describe and discuss the components and features of W-CDMA. |
| UWC 136 HS/EDGE | outline the evolution, development, and major characteristics of EDGE. |
| cdma2000 | describe and discuss the major components and functions of cdma2000. |

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3G Communication Systems

References

Books

Fundamentals of Telecommunications

1999, Roger L Freeman, John Wiley & Sons, 0471296996

Introduction to Wireless Local Loop: Broadband and Narrowband Systems

2000, William Webb, Artech House, 1580530710

Mobile Data and Wireless LAN Technologies

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This is to certify that

Chris FitzGerald

has completed the course

Alternative Access Methods in a Wireless Environment - 21956_eng

on

12/26/07



Association for
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Alternative Access Methods in a Wireless Environment

About This Course

Overview/Description

To discuss the history, development and functionality of fixed wireless-access, satellite, and trunked-radio technologies.

Target Audience:

Technical professionals; IT and business managers who need to learn about current and future mobile wireless technologies; students studying or researching wireless communications and cell-phone technologies.

Requires an understanding of computers and the basic concepts of data communications.

Certification:

No Certifications for this Course.

Expected Duration:

1 Hours 50 Minutes

First publication date:

This course was released June 12, 2001.

Last revision:

This course was last updated August 16, 2005.

Course Number:

21956_eng

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Alternative Access Methods in a Wireless Environment

Course Objectives

| Topic Name | When you have completed this topic, you should be able to |
|-------------------------------|---|
| Wireless in the local loop | explain what is meant by wireless in the local loop (WLL), outline the advantages and disadvantages of WLL systems, and identify some of the important WLL technologies used. |
| WLL regulation and mobility | describe the radio spectrum and explain the differing degrees of mobility available in the local loop. |
| Broadband wireless access | define and discuss broadband wireless access, including MMDS, LMDS, Hiperaccess and CABSINET. |
| The evolution of WLL | explain the major issues and advances occurring in the WLL environment. |
| Satellite basics and services | discuss the satellite communications industry– its successes, failures, and future prospects. |
| Private mobile radio | describe the components, users, functionality, and standards of private mobile radio. |
| Trunked radio | provide an overview of trunked radio systems and trunking technologies. |
| Cordless technology | provide an overview of cordless technology. |

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Alternative Access Methods in a Wireless Environment References

Books

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WCDMA for UTMS: Radio Access For Third Generation Mobile Communication

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Wideband CDMA for Third Generation Mobile Communications

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*This is to certify that
Chris FitzGerald
has completed the course
Bluetooth and HomeRF - 21937_eng
on
12/27/07*



Association for
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Bluetooth and HomeRF

About This Course

Overview/Description

To describe and discuss the major issues surrounding Bluetooth and HomeRF technology, their respective architectures, functionalities, and application environments.

Target Audience:

Technical professionals; IT and business managers who need to learn about current and future mobile wireless technologies; students studying or researching wireless communications and cell-phone technologies.

Requires an understanding of computers and the basic concepts of data communications.

Certification:

No Certifications for this Course.

Expected Duration:

2 Hours 20 Minutes

First publication date:

This course was released June 12, 2001.

Last revision:

This course was last updated May 28, 2007.

Course Number:

21937_eng

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Bluetooth and HomeRF

Course Objectives

| Topic Name | When you have completed this topic, you should be able to |
|---|---|
| Personal devices | outline the different types of mobile devices and explain their functionality. |
| Integrating the user and the network | describe and discuss communication and interaction between cell phones, laptops, and PDAs. |
| The Bluetooth standard | describe the components, modulation techniques, transmission means and operation of Bluetooth technology. |
| Implementing the Bluetooth standard | explain the formats of packets and payloads, and the channel and device addressing systems used within Bluetooth. |
| Bluetooth protocols | describe all the major protocols used in Bluetooth technology. |
| Bluetooth technology and implementation | understand the issues surrounding Bluetooth technology and its implementation. |
| Introduction to HomeRF | discuss the fundamentals of HomeRF. |
| HomeRF architecture and implementation | describe the main components and functionality of HomeRF architecture. |

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Bluetooth and HomeRF References

Books

Fundamentals of Telecommunications

1999, Roger L Freeman, John Wiley & Sons, 0471296996

Introduction to Wireless Local Loop: Broadband and Narrowband Systems

2000, William Webb, Artech House, 1580530710

Mobile Data and Wireless LAN Technologies

1997, Rifaat A. Dayem, Prentice Hall, 0138390517

Wideband CDMA for Third Generation Mobile Communications

1998, Tero Ojanpera and Ramjee Prasad, Prentice Hall, 089006735X

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