COURSE SUMMARY

HIGHLIGHTS

- Designed to significantly improve your ability to engage in technology discussions, planning, decisions, and service development
- Specific information on network infrastructure, architecture and operation
- Comprehensive overview of existing and emerging technologies
- Latest trends and Industry direction from Ovum
- Implementation and integration options discussed
- Engaging, interactive delivery style
- Topics include—GSM, GPRS, EDGE, and evolution to 3G and beyond

OUTCOMES & COMPETENCY DEVELOPMENT

At the end of the course, the delegate will be able to:

- Chart the likely evolution of telecommunications and the global trends in services & applications
- Identify how EDGE can be used to improve data rates within modern networks
- Discuss with confidence GPRS services, including GPRS mobile devices and class of operation, quality of service issues, network rollout, billing options, and service concepts
- Relate the functions of GPRS to the needs of mobile service provision
- Create a diagrammatic representation of the GPRS System Architecture
- Understand Mobile Network requirements and their migration paths including how different technologies are categorised according to the generational model (1G, 2G, 2.5G, 3G and 4G)
- Identify the key drivers for 2.5G & 3G and describe the network functionality, architecture and operation
- List the different protocols used within a GPRS network, briefly describing the role each plays within the overall system
- Explain briefly how IP and Data techniques are used within the telecoms network
- Follow and describe the basic GPRS procedures including connection, location management, context activation and security

"The course was good and very helpful, the teacher was well up to the task!"

GCL, Econet

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## COURSE CONTENTS

### TELECOMS INDUSTRY OUTLOOK

Many challenges and opportunities face the ever-changing communications industry over the next few years, and this module provides an analysis of the current situation and changing customer requirements, as well as predicting future trends, growth markets and technologies. The aim is to provide a clearer picture of the way ahead. The information is drawn from Ovum’s vast market intelligence resources.

- Trends and forecasts
- Changing user experience
- Fixed, mobile and converged markets
- Mobile broadband
- Operator strategies
- Implications for vendors and customers

### GSM INTRODUCTION AND NETWORK ARCHITECTURE

GSM is the foundation upon which modern data networks are built. This section establishes GSM’s important role and function.

- Historical Perspective
- Development and Specifications
- GSM - Basics
- GSM Network Architecture
- Network and Switching Sub-System NSS
- Base Station Subsystem BSS
- Operations and Maintenance
- Circuit Switching and Packet Switching
- General Packet Radio Service GPRS

### GPRS PROTOCOLS

This section provides an general overview of the role of protocols within telecoms and continues with a description of the specific protocols used within GPRS and EDGE.

- The OSI 7 Layer Model
- GPRS and the OSI 7 Layer Model
- GPRS Tunnelling Protocol GTP
- Routing Functions of GGSN
- GTP Header
- Use of TCP / UDP & IP
- Sub Network Dependent Convergence Protocol SNDCP
- Routing from SGSN to MS
- SNDCP & LLC Headers
- Signalling Protocol Stacks

### GPRS AIR INTERFACE

This section looks at the way the radio interface between the handset and the network operates. The functions and limitations are discussed in detail.

- GPRS Air Interface Basics
- GPRS Radio Block
- Allocation of Resources To GPRS
- Radio Link Control RLC
- Medium Access Control MAC
- GPRS Variable Coding Schemes
- Use of Multiple Timeslots

### INTERNET PROTOCOL (IP) AND GPRS

Here we explore the vital role that IP plays within GPRS and EDGE. Data applications are explored along with broader issues of internet access from a wireless device.

- Services Offered by the Internet
- Internet Infrastructure / Architecture
- Internet Addressing and the Domain Names System
- Intranet and Internet Access
- Roaming in GPRS – PLMN and ISP Roaming
- Billing

### EDGE AND E-GPRS

In this section, we explore the various enhancements that are possible to a GPRS network to increase data rates and improve performance. EDGE architecture and operation are discussed along with the impact on data services.

- Introduction to EDGE
- EDGE Modulation and Coding
- Modulation and Coding Schemes and Data Rates
- Data Transfer at the Air Interface
- Error Control and Link Adaptation
- Enhancing GPRS with EDGE
- Operator Requirements for EDGE Deployment

### EVOLUTION TO THE THIRD GENERATION AND BEYOND

In this final section, we explore the market and technology drivers towards 3G and beyond. The development route beyond GPRS and EDGE is discussed along with the technical and commercial implications for these decisions. Topics include:

- Identifying optimisation targets
- Evolution to Third Generation
- The Handset Market
- Wireless Application Protocol (WAP)
- Code Division Multiple Access (CDMA)
- The 3G Standards and Specifications
- HSPA and HSPA+
- Frequency Re-Use With CDMA
- UMTS Terrestrial Radio Access – UTRA
- Radio Spectrum and Licensing
- Services
About Telecoms & Tech Academy

Telecoms & Tech Academy, part of Informa Tech is a leading training partner to the telecoms, media and technology (TMT) industries, having trained more than 30,000 professionals and 500 businesses globally.

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