COURSE DESCRIPTION
GPRS AND EDGE
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 the Informa Telecoms and Media Research Team
- Implementation and integration options discussed
- Engaging, interactive delivery style
- Topics include—GSM, GPRS, EDGE, and evolution to 3G and beyond

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

GCL, Econet

COURSE SUMMARY

This training course provides an excellent grounding in GPRS & EDGE systems and services. It starts with the fundamental concepts and builds rapidly to give a comprehensive view of the technologies and the way they are implemented within modern networks, including architecture, operation and capabilities.

The course begins with an industry perspective, identifying the key trends in modern telecommunications and the changing demands of the customer. An overview of GSM technology is then provided onto which GPRS and EDGE concepts, architecture and operation are built. The internet and its protocols are also explored to ensure participants fully understand the capabilities, limitations and impact on the customer of the overall network. Throughout, we build a much greater appreciation of the way services are provided end-to-end and the impact on the customer.

The highly interactive nature of the course allows delegates to get all of their questions fully answered.

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

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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 Informa’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

**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

**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

**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

**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

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OUR TRAINING SERVICES

TELECOMS ACADEMY STRUCTURE

Our training programmes are delivered worldwide as part of the training and development plans of many operators, vendors, and service providers. The programmes cover a wide range of competency development requirements.

To ensure we meet the training needs of the industry as effectively as possible, we operate three schools:

School of Telecoms Management
Business training tailored to the telecoms industry, ranging from the intensive 5-day Telecoms Mini MBA to specialist leadership and marketing training.

School of Advanced Communication Technologies
Covering a multitude of technologies, these courses range from overviews aimed at nontechnical staff to in-depth engineering training.

Distance Learning
Our comprehensive suite of Distance Learning programmes provide an excellent opportunity to expand knowledge and build confidence.

PACE ENABLED TRAINING

Our programmes are PACE Enabled – a training method that optimises both training value and student engagement. It delivers highly efficient competency development that is focused squarely on practical application in the work place. It is simple in concept and comprises four key elements;

- **Preparation** – Pre-course preparation in order to “hit the ground running”
- **Application** – Applied Learning that focuses on practical application in order to maximise both training value
- **Consolidation** – Post-course continuing competency development, access to resources and on-going support
- **Experience** – An outstanding end-to-end training experience designed to develop competences as effectively as possible

OUR TRAINERS

We only use trainers and programme directors that satisfy the following three criteria:

- Experts in their field
- High level of Industry Experience
- Expert facilitators and training professionals.

All our trainers have undergone a rigorous election process and are subject to continuous monitoring and evaluation. Each trainer is accredited for specific courses or topic areas. Whether engineers or business experts, all our trainers are required to continue their own development within their specialist areas, and to broaden their Industry view of trends, best practice and technology.

This is achieved by our on-going work with many tier 1 operators and vendors, and by full exposure to Ovum research and KNect 365 TMT worldwide events.

UNIVERSITY ACCREDITATION

Some of our programmes have been accredited by the University of Derby Corporate; a UK-based university highly acclaimed in the area of employer engagement. They are at the forefront of the drive to integrate highly focused industry-led training with the academic rigor and quality control of university-based education. Our comprehensive Advanced Telecoms Management Series have been accredited Post-Graduate Level, with our extensive suite of Distance Learning at Undergraduate Level)

We would be happy to discuss extending accreditation to tailored ATMS or programmes based on our Distance Learning modules. Although accreditation is specific to these programmes, the work we do with the University of Derby enable us to develop and apply best practice across our portfolio.

CUSTOMISED IN-HOUSE TRAINING

Telecoms Academy has worked with countless companies to deliver customised training programmes. We take time to understand your requirements, you’ll work with our specialist training team to ensure that we deliver your perfect training programme for your business.

A customised training programme from Telecoms Academy ensures you get a course that precisely matches your organisation's needs, presented by a first-rate training organisation, with access to all the latest industry research and analysis..

Why choose in-house training from Telecoms Academy?

- Content can be customised to focus on the issues you want – work with us to develop the training course to match the exact needs.
- Unique industry research – from Ovum’s team of industry leading analysts
- Expert trainers – our team of versatile trainers have the knowledge and experience to deliver a highly effective learning experience
- The most efficient way to train your staff – at the time and location to minimise disruption
- Flexible delivery options – with a range of instructor led, distance learning and virtual classroom formats available you can build a blended solution to maximise training effectiveness over the long term
- Pre and post course assessment – can be included in programmes to measure competencies and check on the required progress.

Contact us to discuss how we can build your perfect programme.