Telecoms & Tech Academy

DIPLOMA IN EVOLVING TECHNOLGIES

Gain comprehensive knowledge of 5G, virtualisation, cloud, IoT and Smart Cities

www.telecomstechacademy.com/course/diploma-in-evolving-technologies

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ABOUT THIS COURSE

The Diploma in Evolving Technologies is a 10-month distance learning programme providing the knowledge and competencies to effectively build and maintain competitive advantage. The course builds the knowledge and strategic skills required by organizations undergoing, or looking to undergo, evolution towards the new wave of emerging technologies including LTE, LTE-A and 5G. Participants study 4 compulsory modules and choose 5 specialised modules, allowing them to customise the course towards areas of interest.

Who will benefit?

This programme would suit those in technical and Commercial jobs functions in the telecommunications industry. The programme would also suit employees wishing to gain experience to progress to more senior roles, as well as graduates or new employees looking to develop key industry knowledge.

The programme format

The modular structure allows you to customise the programme to support your aspirations and to fulfil your individual and organisational requirements, you study an introductory module, four core modules, followed by five elective modules.

Each module is designed to be studied over a period of a month and requires 20 hours of direct learning. Comprehensive courseware comprise written modules, self-test exercises, video tutorials, Live on Web tutor support, topic-specific webinars, supporting material, best practice discussion groups, and comprehensive learning packs.

Assessment is on-line and can be done in your place of work or study, subject to invigilation, and requires both short/multiple choice answers as well as longer written essay submissions.

WHAT SETS THIS PROGRAMME APART?

- **The courses are examined and qualifiied by the biggest global provider of research, intelligence, events and training to the telecoms industry.**
- **Through our mix of learning delivery methods and support, we keep you fully engaged to ensure you meet the required standard.**
- **Flexible modular course structure allows you to study subjects most relevant to you and your business**
- **Regular webinars are provided, covering the latest technologies,business processes and industry developments**
- **You decide where and when to study and then set your own pace.**
- **You will have full tutor support from a dedicated tutor with a wealth of industry experience**

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COURSE SUMMARY

Students complete 9 Modules

Core Modules (4 Modules)	Specialist Modules (Select 5)
C1 Communication and Connectivity: Supporting Fast-Changing Societies	**E1** Mobile Broadband Technologies
C2 The Telecoms Business Environment	**E2** IP Networks and Systems
C3 Access Network Technologies	**E3** Traffic Engineering, QoS and MPLS in IP Networks
C4 Core Network Technologies	**E4** Connected TV and Multimedia
	E5 Security and Fraud Prevention
	E6 Radio Principles
	E7 Radio Network Planning
	E8 Maximising LTE Performance and Efficiency
	E9 Technologies 2025
	E10 Towards 5G - Markets and Technologies

ENHANCED LEARNING SOLUTIONS

Managed Learning System

Offers convenient and flexible access to resources such as course material, frequently asked questions, practiceexaminations and tutor support.

Fully Illustrated Courseware

Soft copy course notes, data and analysis from the Ovum research team, practical exercises and self-assessment tests in preparation for exams.

Tutorials

Regular informal tutorials to discuss the programme, ideas and progress, they give a chance to meet with tutors and other students online.

Diploma in Evolving Technologies

Video Lessons

Informative videos used to outline key study points and to set the context for study and consolidate ideas, maximising learning and engagement.

Live Webinars

Enhance your learning with live webinars, bringing the latest technologies and business management topics that

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SYLLABUS - Core Modules

C1 - Communication and Connectivity - Supporting Fast Changing Societies

- The First and Second Digital Tevolutions
- The Need for Change
- The Challenge from OTT
- The Cloud
- M2M and Big data
- The Internet of Things
- Connected Environments
- The End-to-End Digital Enterprise
- Digital Solutions Enterprises
- Virtual Reality
- Technology Outlook Overview
- Wireline Access Evolution
- Wireless Access Evolution to LTE-A Pro
- 5G and Other Wireless Solutions for IoT
- SDN & NFV

C2 - The Telecoms Business Environment

- Core Business Trends—Fixed
- Core Busioness Trends—Mobile
- Mobile Broadband Trends
- Shareholders' Expectations
- Customers' Expectations
- Third Parties' Expectations
- Spectrum and Infrastructure Provision
- Mobile Broadband Service Provision
- The Services Landscape
- Enterprise Services
- The Internet of Things (IoT)
- The Consumer Sector
- Dealing with Current Issues
- The Future of Telcos

C3 - Access Network Technologies

- Access Networks
- Cable Access Networks
- Fibre Access Networks
- EFM (Ethernet in the First Mile)
- Wireless Technology Evolution
- Third-Generation Technologies
- CDMA2000 (3GPP2) Evolution
- LTE (Long Term Evolution)
- LTE-A (LTE Advanced)
- WLANs and WPANs
- WiMAX
- WiMAX Operation
- NGN and IMS Network Access

C4 - Core Network Technologies

- Core Network Fundamentals
- Ethernet and the Metropolitan Area Network
- WAN Technologies
- Transmission in the Core Network
- Next Generation Networks
- IP Explained
- Quality of Service Requirements
- IP in the Core Network
- Towards All-IP Networks
- SIP (Session Initiation Protocol)
- Associated Protocols
- IMS Overview and Services
- IMS Architecture

CABLE & WIRELESS

"The program was well structured and the instructional method was excellent..."

SYLLABUS - Specialist Modules (select 5)

E1 - Mobile Broadband Technologies

- Overall Market Trends
- Mobile Broadband Market Trends
- Background to 3G Development
- Core Network Evolution
- LTE Architecture Overview
- LTE Core Technologies
- The LTE Protocol Stack
- IEEE 802 Technologies
- Mobile Technology Outlook and Challenges
- LTE-A Framework and Key Features
- SDN and NFV
- 4G Services, Applications, and Devices
- Towards 5G
- 5G Technology Outlook

E2 - IP Networks and Systems

- Introduction to TCP/IP
- IPv4 Addressing
- IPv6
- Routing through IP Networks
- IP Applications
- Proof of Identity
- Protection of Privacy
- Protection of Resources
- Quality of Service
- IP Layer WoS Mechanisms
- Dimensioning a Multimedia IP Network
- IP Telephony and VoIP
- H.323, MGCP, and H.248/Medgaco
- SIP (Session Initiation Protocol
- IMS (IP Multimedia Subsystem)
- VoLTE (Voice Over LTE)
- GPRS
- UMTS
- LTE
- QoS in LTE
- EPC Protocols Overview
- PMIPv6 (Proxy Mobile IP version 6)

E3 - Traffic Engineering, MPLS and QoS in IP Networks

- An Overview of QoS
- QoS and Privacy
- QoS and Protection
- QoS Within the IP Layer
- The LTE QoS Concept
- Introduction to MPLS
- Label Distribution
- LDP Procedures
- Traffic Engineering
- Content Delivery Networks (CDNs)
- Security Framework for MPLS and GMPLS Networks
- MPLS Authentication and Encryption
- MPLS-VPN Services Overview

E4 - Connected TV and Multimedia

- The History of Television
- Technology
- Mobile Video
- Streaming and Download Services
- Internet Video
- Downloading Services
- Digital Rights Management (DRM)
- Big Screen Viewing
- Developing Technologies
- Case Studies

E5 - Operating Effectively

- The Evolution of Network Security
- Security Models
- Other Security Issues
- Secure Execution Environments
- Popular Smartphone Platforms
- Mobile Payment Technologies
- IP (Internet Protocol) Deployments
- Threats from Staff
- Developing Security Issues

SYLLABUS - Specialist Modules (select 5)

E6 - Radio Principles

- Radio Spectrum Basics
- RF and Baseband Signals
- Decibels (dB) and Noise in RF Theory
- Modulation Schemes
- Principles of Propagation and Path Loss
- Sharing the Radio Spectrum
- Multiple-Access Methods
- Principles of Cellular Frequency
- Capacity in Cellular Radio Systems
- Cell Size and Link Budgets
- GSM Physical Channels
- GSM Logical Channels
- GSM Procedures
- GSM Dedicated Mode Procedures
- GPRS Air Interface and EDGE
- WCDMA Principles
- UMTS (WCDMA) Codes
- Air Interface Channels and Protocol
- UMTS Procedures and Techniques
- Spectrum for LTE
- OFDMA and SC-FDMA
- LTE Procedures
- Antenna Techniques for LTE

E7 - LTE Radio Network Planning

- The Radio Planning Lifecycle
- RF and Baseband Signals
- Decibels (dB) and Noise in RG Theory
- Modulation Scheme for LTE
- Multiple Access Schemes
- Propagation Basics
- Mechanisms of Propagation
- Interference and frequency Reuse
- Advanced Antenna Techniques for LTE
- Defining a Link Budget Statement
- Transmitter Power in LTE Link Budgets
- eNB and UE Antenna Performance
- Calculating Sensitivity
- System Gain and Maximum Path Loss
- Path Loss Modelling

E8 - Maximising LTE Performance and Efficiency

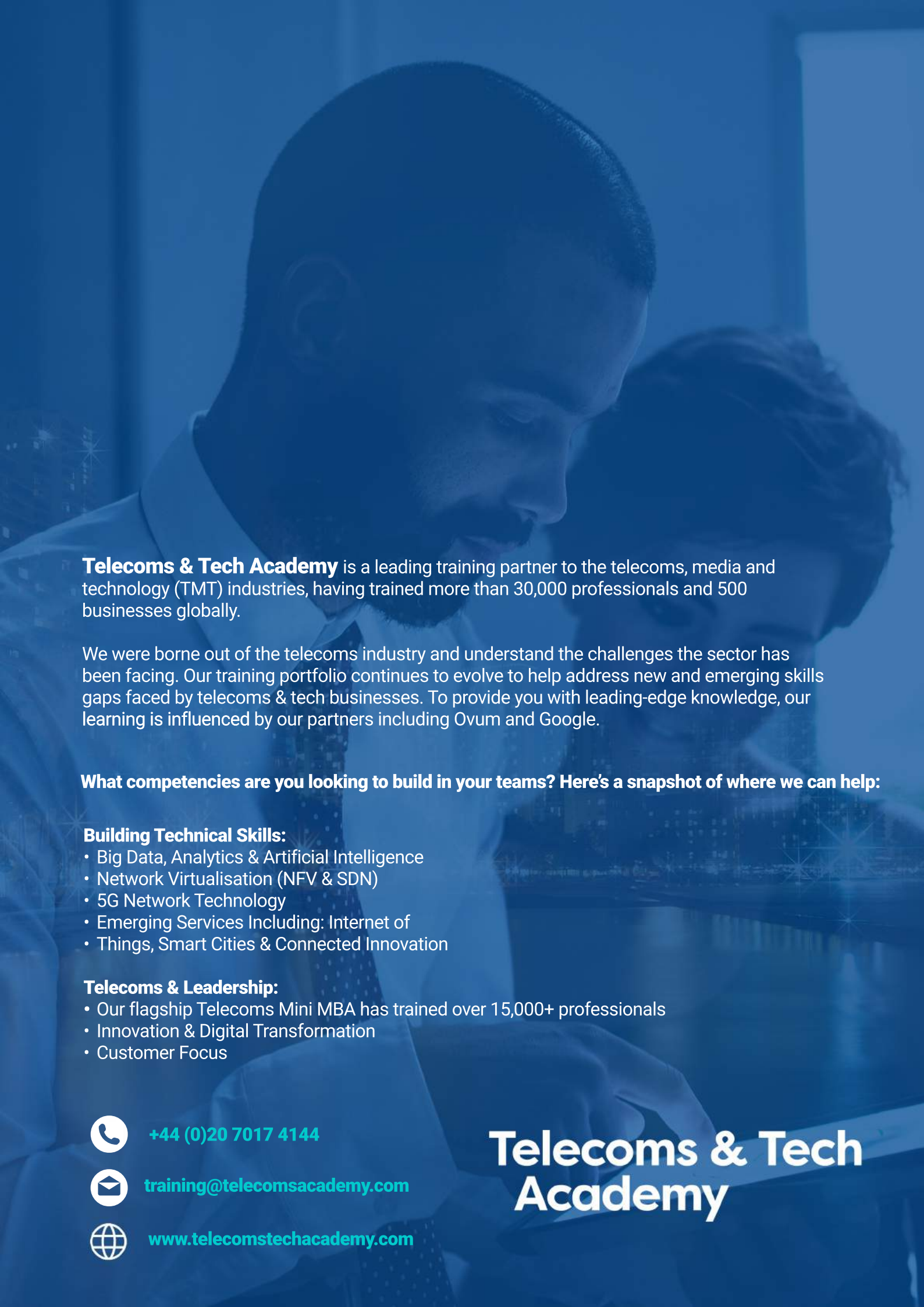
- Optimising the Radio Network
- Idle Mode Procedures and Mobility
- Connected Mode Procedures and Mobility
- Introduction to LTE-A
- CA (Carrier Aggregation)
- Relay Nodes, CoMP, and MIMO Enhancements
- Introducing Small Cells and HetNets
- Small Cell Planning Considerations
- Small Cell Performance
- Managing Interference

E9 - Technologies 2025

- The Digital World in 2020 and beyond
- The digital imperative
- Telecoms Industry Outlook 2018
- LTE – what it does now, what it will do
- The importance and impact of 5G
- How 5G will change communications
- The 'cloudification' of the network
- SDN and NFV
- Internet of Things (IoT)
- IoT use cases
- IoT standardisation
- Existing and proposed technologies for IoT
- The business impact of IoT
- IoT security
- Smart cities
- Blockchain – concept, technology and impact
- Artificial Intelligence (AI)
- Big Data for telecoms
- Wireless access evolution to LTE-A Pro
- Digital transformation
- The end-to-end digital enterprise

E10 - Internet of Things

- IoT Business Case/Use Cases
- IoT Reference Architecture/Standardisation
- 3GPP IoT
- IEEE IoT
- Other IoT
- Spectrum for IoT
- IoT Security



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

We were borne out of the telecoms industry and understand the challenges the sector has been facing. Our training portfolio continues to evolve to help address new and emerging skills gaps faced by telecoms & tech businesses. To provide you with leading-edge knowledge, our learning is influenced by our partners including Ovum and Google.

What competencies are you looking to build in your teams? Here's a snapshot of where we can help:

Building Technical Skills:
- Big Data, Analytics & Artificial Intelligence
- Network Virtualisation (NFV & SDN)
- 5G Network Technology
- Emerging Services Including: Internet of
- Things, Smart Cities & Connected Innovation

Telecoms & Leadership:
- Our flagship Telecoms Mini MBA has trained over 15,000+ professionals
- Innovation & Digital Transformation
- Customer Focus

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