

# Telecoms & Tech Academy

SCHOOL OF ADVANCED  
COMMUNICATIONS  
TECHNOLOGIES

## COURSE DESCRIPTION

# 5G TECHNOLOGY

**Format:**  
Classroom or  
Live on Web

**Duration:**  
2 Day or 4 x 3  
Hour Modules

**KNect365  
Learning**  
an informa business

# COURSE SUMMARY

## HIGHLIGHTS

- **Highly focused and in-depth training from the experts - including relevant updates from Informa's extensive research team**
- **Trainers and programme directors that are experts, industry experienced, and highly accomplished training professionals**
- **Training outcomes and competency development designed to meet industry and organisational requirements**



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

GCL, Econet

## COURSE SUMMARY

In this programme we explore the concepts of 5G technology, including capability requirements, the technologies that will deliver the core capabilities, and the impact on the customer proposition. We look holistically at the role of 5G in the technology roadmap and what it means for communication services providers (CSPs).

Topics including current standardisation work, regulation and industry activity; usage scenarios and deployment options; performance; capacity requirements; interoperability; security requirements; architectures; spectrum; and the impact on business models are all discussed.

Participants will build a comprehensive picture of 5G, as it stands, enabling them to make more informed technology and business decisions and contribute more effectively to successful strategy development.

## AVAILABILITY

All our programmes are available on a customer-specific basis:

- Fully Customisable
- Range of delivery formats available
- PACE-enabled: maximise learning & ROI
- Experienced consultants and trainers

## OUTCOMES & COMPETENCY DEVELOPMENT

Participants will develop or be able to:

- Contribute much more effectively to decision making and medium / long term strategy development within your organisation.
- Evaluate implementation options for 5G, building knowledge of a comprehensive set of technology / deployment scenarios, and identifying the use case that each combination can effectively support.
- Develop technology solutions and roadmaps that are better aligned with the expected industry direction and that take account of latest technology developments and initiatives.
- A solid foundation on which to build organisational competency development plans to ensure opportunities arising from 5G can be maximised.
- Confidence to set expectation and drive internal debate on advanced technology issues, and to better evaluate solutions in terms of commercial viability, risk, and strategy.

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[telecomstechacademy.com](https://telecomstechacademy.com)

Book over the phone  
**+44 (0)20 7017 4144**

Book via email  
[training@telecomstechacademy.com](mailto:training@telecomstechacademy.com)

# COURSE CONTENTS

## OVUM OPERATOR SURVEY OF 5G

A brief opening session presenting the findings of recent survey of mobile operators in which the respondents answered questions on when 5G will be available, the key 5G technologies and probable utilisation of 5G services.

## DEFINING 5G, MARKET DRIVERS AND USE CASES

- 5G as a Concept
- Market Drivers for 5G
- Key Requirements & Design Principles
- Performance Requirements
- Consumer Device Issues
- Supporting Video and TV
- 5G, M2M and the Internet of Things
- Broadcast & Multicast
- Advanced Use Cases
- Smart Sensors
- HD City
- Augmented Reality
- Stadium
- Public Safety / Emergency
- Organisations Driving 5G Development
- Standardisation Roadmap
- 5G and LTE Co-existence
- Spectrum, Licensing and Regulatory Issues
- Impact of 5G on CSP / Operator Strategy
- Case Studies

## 5G TECHNOLOGIES AND CORE NETWORK CONCEPTS

- Current network performance and Required Improvements
- Design Principles for 5G
- Radio Network
- Core Network
- Operations and Maintenance
- Networking Technologies for 5G
- Network Function Virtualisation
- NFV Concepts
- NFV Benefits and Challenges
- NFV in 4G Networks
- Software Defined Networks
- SDN Concepts
- SDN Benefits and Challenges
- SDN in 4G Networks
- 5G Core Network Concepts
- Overall Network Picture and Ideas
- Functional Areas of the 5G Network
- Network Slicing Concepts
- Network Slicing Examples
- NFV and SDN in 5G
- Mobile Edge Computing
- ETSI Reference
- MEC Architectures
- MEC Examples

## 5G RADIO ACCESS NETWORKS AND TECHNOLOGIES

- Introducing 5G RAN
  - 5G RAN Performance
  - Spectrum Requirements for 5G
  - Evolving LTE toward 5G
  - Co-Existence and Backwards Compatibility
  - Application Requirements for 5G Radio
- Low Latency Design
  - Bandwidth Scaling
  - High Efficiency Radio Frame
  - Low Latency Radio Frame Structures
- Multiple Access for 5G Radio
  - Multiple Access Concepts and Design Targets
  - Candidate Multiple Access
  - Multiple Access Compared
  - NOMA
  - Radio Waveforms for 5G
  - Waveform Requirements
  - Candidate Waveforms
  - Waveform Comparisons
  - MIMO in 5G
- RAN Architecture
  - Current and Future RAN Access
  - RAN Protocols and Transmission
  - Fronthaul and Backhaul requirements
  - CPRI Concepts for Fronthaul
  - D-RAN and C-RAN
  - User Plane Aggregation



# OUR TRAINING SERVICES

## TELECOMS & TECH 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 & Tech Business

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.

## 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 selection 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 KNet 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 & Tech 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 & Tech 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 & TECH 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.**



[www.telecomstechacademy.com](http://www.telecomstechacademy.com)

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