

**HRODC Postgraduate Training Institute,**



***A Postgraduate-Only Institution,  
Verified by, & Registered with,  
UK's Department for Education.***

**#097**

**Telecommunications  
Engineering,  
Postgraduate Programme.**

**Leading To:**

**Postgraduate Diploma in  
Telecommunications  
Engineering.**



**+44 1902 763 607;**  
**+44 20 8133 2760;**  
**+44 7736 147 507;**  
**+44 7586 676 208.**



**https://www.hrodc.com**  
**Skype: hrodcitdpgti4**  
**institute@hrodc.com;**  
**london@hrodc.com**


**HRODC Postgraduate Training Institute**  
**A Postgraduate-Only Institution,**  
**Verified by, & Registered with, UK's Department for Education**

**Prof. Dr. R. B. Crawford - Director**  
PhD (UCL – Uni London); MEd M. (Uni Bath); PGC IS (Uni West London);  
Adv Dip Sc Ed (Uni Bristol); PG Dip Doctoral Research Supervision  
(Uni Wolverhampton); F.I.M.S.; HR Specialist (I.M.S.);  
Executive M. AOM; M. AAM; M. ISGS; M. SCOS; M. RG.

**Programme or Course Coordinator:**  
Prof. Dr. R. B. Crawford, is the Director of  
HRODC Postgraduate Training Institute.  
He has the following Qualifications and Affiliations:



- Doctor of Philosophy {(PhD) {University College London (UCL) - University of London}};
- MEd Management (University of Bath);
- Postgraduate (Advanced) Diploma Science Teacher Ed. (University of Bristol);
- Postgraduate Certificate in Information Systems (University of West London, formerly Thames Valley University);
- Diploma in Doctoral Research Supervision, (University of Wolverhampton);
- Teaching Certificate;
- Fellow of the Institute of Management Specialists;
- Human Resources Specialist, of the Institute of Management Specialists;
- Member of the Asian Academy of Management (MAAM);



**HRODC Postgraduate Training Institute, A Postgraduate-Only Institution**  
**HQ: 122A Bhylls Lane, Wolverhampton, WV3 8DZ, West Midlands, UK**  
**Primary Website = <https://www.hrodc.com>**  
**Prof. Dr. R. B. Crawford, Director.**

- Member of the International Society of Gesture Studies (MISGS);
- Member of the Standing Council for Organisational Symbolism (MSCOS);
- Member of ResearchGate;
- Executive Member of Academy of Management (AOM). There, his contribution incorporates the judging of competitions, review of journal articles, and guiding the development of conference papers. He also contributes to the Disciplines of:
  - Human Resources;
  - Organization and Management Theory;
  - Organization Development and Change;
  - Research Methods;
  - Conflict Management;
  - Organizational Behavior;
  - Management Consulting;
  - Gender & Diversity in Organizations; and
  - Critical Management Studies.

**Professor Dr. Crawford has been an Academic in the following UK Universities:**

- University of London (Royal Holloway), as Research Tutor;
- University of Greenwich (Business School), as Senior Lecturer (Associate Professor), in Organisational Behaviour and Human Resource Management;
- University of Wolverhampton, (Wolverhampton Business School), as Senior Lecturer (Associate Professor), in Organisational Behaviour and Human Resource Management;
- London Southbank University (Business School), as Lecturer and Unit Leader.

**His responsibilities in these roles included:**

- Doctoral Research Supervisor;
- Admissions Tutor;
- Postgraduate and Undergraduate Dissertation Supervisor;
- Programme Leader;
- Personal Tutor.

**He is formerly an Expatriate at:**

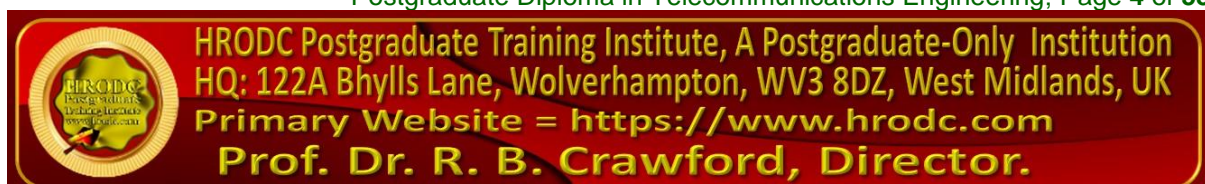
- Ministry of Education, Sokoto, Nigeria;
- Ministry of Science and Technical Education, Sokoto, Nigeria;

- University of Sokoto, Nigeria;
- College of Education, Sokoto, Nigeria; and

Former Editor-In-Chief of 'Sokoto Journal of Education'.



- Analogue Telephone Service Providers;
- Broadband Service Providers;
- Controller Area Network (CAN) Engineers;
- Controller Area Network (CAN) Facilitators;
- Controller Area Network (CAN) Maintenance Engineers;
- Controller Area Network (CAN) Subscribers;
- Digital Telephone Service Providers;
- Electrical Engineers;
- Electronic Engineers;
- Fibre Optic Communication Maintenance Engineers;
- Fibre Optic Communication Service Engineers;
- Global Area Network (GAN) Engineers;
- Global Area Network (GAN) Maintenance Engineers;
- Global Area Network (GAN) Regulators;
- Global Area Network (GAN) Subscribers;
- International Mobile Telephone Service Partners;
- Internet Area Network (IAN) Engineers;
- Internet Area Network (IAN) Investors;
- Internet Area Network (IAN) Maintenance Engineers;
- Internet Area Network (IAN) Subscribers;
- Internet Service Providers;
- Investors in Controller Area Network (CAN);
- Investors in Global Area Network (GAN);
- Investors in Internet Area Network (IAN);
- Investors in Local Area Network (LAN);
- Investors in Metropolitan Area Network (MAN);



- Investors in Personal Area Network (PAN);
- Investors in Storage Area Network (SAN);
- Investors in Wide Area Network (WAN);
- Investors in Wireless Fidelity (Wi-Fi);
- Investors in Wireless Local Area Network (WLAN);
- IT Personnel;
- Local Area Network (LAN) Engineers;
- Local Area Network (LAN) Installation Engineers;
- Local Area Network (LAN) Maintenance Engineers;
- Local Area Network (LAN) Service Engineers;
- Local Area Network (LAN) Service Providers;
- Local Area Network (LAN) Subscribers;
- Metropolitan Area Network (MAN) Engineers;
- Metropolitan Area Network (MAN) Maintenance Engineers;
- Metropolitan Area Network (MAN) Service Providers;
- Metropolitan Area Network (MAN) Subscribers;
- Mobile Telecommunications Service Operator;
- Mobile Telephone Handset Manufacturers;
- Mobile Telephone Handset Retailers;
- Mobile Telephone Service Providers;
- Mobile Telephone Service Regulators;
- Network Administrators;
- Network Analysts;
- Network Connectivity Experts;
- Personal Area Network (PAN) Engineers;
- Personal Area Network (PAN) Facilitators;
- Personal Area Network (PAN) Maintenance Engineers;
- Personal Area Network (PAN) Subscribers;
- Project Engineers;
- Quality Engineers for Fibre Optic Communication;
- Quality Engineers for Very Small Aperture Terminal (VSAT) Networks;
- Satellite Transmitting Engineers;
- Site Engineers;
- Storage Area Network (SAN) Engineers;
- Storage Area Network (SAN) Facilitators;

- Storage Area Network (SAN) Maintenance Engineers;
- Storage Area Network (SAN) Subscribers;
- Telecommunications Applications Developers;
- Telecommunications Cable Installers;
- Telecommunications Code Writers;
- Telecommunications Design Engineers;
- Telecommunications Engineers;
- Telecommunications Installers;
- Telecommunications Regulators;
- Telecommunications Service Providers;
- Telecommunications Technician;
- Telecommunications Wireless Maintenance Engineers;
- Telecommunications Wireless Service Engineers;
- Telecommunications Wireless Service Providers;
- Very Small Aperture Terminal (VSAT) Network Installation Engineers;
- Very Small Aperture Terminal (VSAT) Networks service Providers;
- Wide Area Network (WAN) Engineers;
- Wide Area Network (WAN) Maintenance Engineers;
- Wide Area Network (WAN) Service Providers;
- Wide Area Network (WAN) Subscribers;
- Wireless Fidelity (Wi-Fi) Distributors;
- Wireless Fidelity (Wi-Fi) Engineers;
- Wireless Fidelity (Wi-Fi) Maintenance Engineers;
- Wireless Fidelity (Wi-Fi) Subscribers;
- Wireless Local Area Network (WLAN) Engineers;
- Wireless Local Area Network (WLAN) Maintenance Engineers;
- Wireless Local Area Network (WLAN) Service Provide;
- Wireless Local Area Network (WLAN) Subscribers.
- All others concerned with the usage, engineering, design, construction, installation, inspection, operation and, or maintenance of electrical grounding systems in telecommunications facilities.



**Programme Duration & Cost:**

- \* Classroom Duration: 12 Weeks; 5 Days Per Week;
- \* Online Duration: 20 Weeks; 3-Hr Day, 6-Day Week;
- \* Classroom Cost: £45,000.00 Per Student;
- \* Online Cost: £30,150.00 Per Student;
- \* Group Cost: Varies with its Size.




**Classroom-Based Cost Includes:**

- Continuous snacks throughout the Event Days;
- Hot Lunch on Event Days;
- City Tour;
- Stationery;
- On-site Internet Access;
- Postgraduate Diploma; Postgraduate Certificate; Diploma – Postgraduate; or
- Certificate of Attendance and Participation – if unsuccessful on resit.



**Students & Delegates are Treated to a Selection of Our Branded Complimentary Products, which Include:**

- Leather Conference Folder;
- Leather Conference Ring Binder/ Writing Pad;
- Key Ring/ Chain;
- Leather Conference (Computer – Phone) Bag – Black or Brown;
- 8-16 GB USB Flash Memory Drive, with Course Material;



HRODC Postgraduate Training Institute, A Postgraduate-Only Institution  
HQ: 122A Bhylls Lane, Wolverhampton, WV3 8DZ, West Midlands, UK  
Primary Website = <https://www.hrodc.com>  
Prof. Dr. R. B. Crawford, Director.

- Branded Metal Pen;
- Branded Polo Shirt.; &
- Branded Carrier Bag.

<b>Telecommunications Engineering, Postgraduate Programme Leading to Postgraduate Diploma in Telecommunications Engineering</b>			
<b>Module Number</b>	<b>Pre-existing Course #</b>	<b>Module Title (Click Links To Navigate)</b>	<b>Credit Value</b>
1	097.M1	<a href="#">Modern Telecommunications System</a>	Double-Credit
2	097.M2	<a href="#">Mobile Communications</a>	Single
3	097.M3	<a href="#">Communication Systems in Telecommunications</a>	6-Credit
4	097.M4	<a href="#">Planning and Management of Communications Systems</a>	Single
5	097.M5	<a href="#">Telecommunications Regulation and Spectrum Management</a>	Double-Credit


 **Daily Schedule: 09:00 To 16:30**  
**But may Vary, with Location.**

**Our Scheduled Delivery Locations Include:**

- \* Amsterdam, Netherlands;
- \* Brussels, Belgium;
- \* Central London, UK;
- \* Dubai, UAE;
- \* Durban, South Africa;
- \* Kuala Lumpur, Malaysia; &
- \* Paris, France.

**Other Locations, & Inhouse, on Request.**



 **HRODC Postgraduate Training Institute, A Postgraduate-Only Institution**  
**HQ: 122A Bhylls Lane, Wolverhampton, WV3 8DZ, West Midlands, UK**  
**Primary Website = <https://www.hrodc.com>**  
**Prof. Dr. R. B. Crawford, Director.**





# Telecommunications Engineering, Postgraduate Programme.


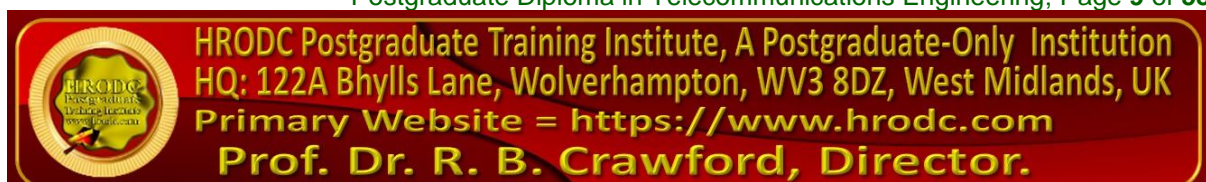
Leading to:  
Postgraduate Diploma in  
Telecommunications Engineering.



## Programme or Course Objectives

By the conclusion of the specified learning and development activities, delegates will be able to:

- Accurately describe a Local Area Network (LAN)
- Accurately explain the principle and process of Multiplexing;
- Carrier Ethernet Transport;
- Case Example: LTE Transport;
- Clearly explain Analog Modulation Methods;
- Cloud Computing and Transport.
- Contextualise Advanced Telecommunications Functionalities;
- Contextualise Time Domain Coding;
- Conversant with Telecommunications Network Services and Applications;
- Demonstrate their understanding of the Design Principles for Voice Over WLAN;
- Demonstrate their understanding of the functionalities of Computer-Supported Telecommunications Applications (CSTA)
- Describe the connection scheme of the Bus Topology;



HRODC Postgraduate Training Institute, A Postgraduate-Only Institution  
HQ: 122A Bhylls Lane, Wolverhampton, WV3 8DZ, West Midlands, UK  
Primary Website = <https://www.hrodc.com>  
Prof. Dr. R. B. Crawford, Director.

- Describe the network arrangement that facilitate the smooth operation of Automatic Teller Machines (ATMs);
- Describe the principles of Spectrum Allocations;
- Describe, with accurate examples, the operation of a Wireless Local Area Network (WLAN);
- Distinguish between a Storage Area Network (SAN) and a Controller Area Network (CAN);
- Distinguish between the Physical and Logical Topologies;
- Explain how a Wide Area Network (WAN) works, in principle;
- Explain the operation of Integrated Services Digital Network (ISDN);
- Explain, with at least 80% accuracy, their understanding of Broadband Service-Multiple Data Streams;
- Explain, with clear examples, the Physical Transmission Systems of a Telecommunications Network;
- Explain, with demonstrations, the Coding Techniques used in Telecommunications Network;
- Explain, with detailed examples, the hosting principles of Cloud Computing;
- Graphically differentiate Voice Identification from Voice Recognition, establishing any relationship between them;
- Graphically illustrate Digital Modulation and Demodulation;
- Highlight the importance and function of Differential Pulse-Code Modulation (DPCM) in Telecommunications Systems;
- Illustrate the connection mechanism of the Star Topology;
- Illustrate the Design Principles for Voice Over WLAN;
- Illustrate the problems and benefits of a Business Exchange;
- Illustrate the relationship between the service logic for a call and the switching facilities in an Intelligent Network (IN);
- Indicate the problems and vulnerabilities of Analog Signals;
- Indicate their understanding of a Metropolitan Area Network (MAN);
- Inter-Operator Networks 202.
- IP Multimedia Subsystem;
- List the principal topologies used in Local Area Networks (LANs);
- Measure Telecommunications signal speed, with at least 80% accuracy;
- Narrate the evolution of telecommunications systems;

- Narrate the mode of operation of a Global Area Network (GAN);
- Provide an enhanced understanding of Time Domain Coding: Pulse Code Modulation;
- Provide succinct explanation of Pulse-Code Modulation (PCM) and the context within which it is used;
- Specify the differences between a Personal Area Network (PAN) an Internet Area Network (IAN);
- Suggest, accurately, the difference between Data-Shrinking and Data Compression;
- Suggest, with heightened accuracy, the advantages of Digital Signals, as opposed to their analogue counterparts;
- Vividly demonstrate their understanding of Waveform Coding;
- Vividly describe the Plain Old Public Telephone System (POTS);
- Wireless Fidelity (Wi-Fi).

## Programme or Course Contents, Concepts, & Issues

# Module 1 Modern Telecommunications Systems.

## M1. Part 1: Telecommunications Principles

- Terminology and Planning Principles;
- Evolution;
- Spectrum Allocations;
- Physical Aspects.

## M1. Part 2: Fixed Telecommunications Networks

- Network Topologies;
- Redundancy;
- Telephone Network;
- User Devices;
- Plain Old Public Telephone System (POTS);
- Integrated Services Digital Network (ISDN);
- Intelligent Network (IN);
- SIP;
- Telephony Solutions for Companies;
- Transport;
- Cloud Computing.

## M1. Part 3: Data Networks

- IPv4;
- IPv6;
- Routing;
- ATM;
- Frame Relay;
- Local Area Network (LAN);
- Wide Area Network (WAN);
- Metropolitan Area Network (MAN);
- Wireless Local Area Network (WLAN);
- Storage Area Network (SAN);
- Controller Area Network (CAN);
- Personal Area Network (PAN);
- Global Area Network (GAN);
- Internet Area Network (IAN);
- Wireless Fidelity (Wi-Fi);
- Inter-Operator Networks 202.



## **M1. Part 4: Telecommunications Network Services and Applications**

- Voice Telecommunications Networks and their place in the advancement of Business and Government Operation;
- Messaging;
- The value and advances of Audio and Video Technology in Industrial and Commercial Settings;
- The extent to which modern Telecommunications have improved the efficiency and effectiveness of Health Care;
- The importance, use and popularity of Telecommunications in Education;
- Computer-Supported Telecommunications Applications (CSTA);
- Advanced Telecommunications Functionalities;
- Business Exchange: Its Value and Limitations;
- Public IP Network Develops to NGN;
- Voice Service Access Points;
- Design Principles for Voice Over WLAN;
- Mobile Services.

## **M1. Part 5: Transmission Networks**

- Physical Transmission Systems;
- Coding Techniques;
- Pulse-Code Modification (PCM);
- Coding Techniques;
- PDH;
- SDH;
- WDM;
- Carrier Ethernet Transport;
- IP Multimedia Subsystem;
- Case Example: LTE Transport;
- Cloud Computing and Transport.
- Analog Modulation Methods;
- Digital Modulation and Demodulation.



## M1. Part 6: Digital Voice

- Waveform Coding;
- Time Domain Coding: Pulse Code Modulation;
- G.711 PCM Standardisation;
- Time Domain Coding: Differential PCM;
- Time Domain Coding: Adaptive Differential PCM;
- Continuous Variable Slope Delta Modulation;
- Frequency Domain Coding;
- Vocoding;
- Hybrid Coding;
- G723.1 Recommendation;
- G.728 Low-Delay CELP Recommendation;
- G.729 Recommendation;
- The GSM Codec;
- Digital Speech Interpolation.

## M1. Part 7: Conceptualising Voice Identification (Voice ID)

- Voice Identification, Defined;
- Theory of Voice Identification;
- Voice ID Systems;
- 3 Parts of Voice ID Systems;
- **Partition of Voice Signal;**
- **Pattern Extraction;**
- **Speaker Authentication;**
- Uses of Voice ID Systems;
- Voice Identification vs. Voice Recognition.



## M1. Part 8: Voice Over IP Concepts (1)

- The Transition to Digital;
- Analogue Signals: Their problems and vulnerability;
- Digital Signals: Advantages and Technological Advancement;
- Adding Meaning to Signals-Codes and Bits;
- A Byte = A Character;
- Baud Rate Versus Bits per Second-Electrical Signal Rates Versus Amount of Information Sent;
- Codes-Adding Meaning to Bits;
- Measuring Speed and Capacity;
- Broadband Service-Multiple Data Streams;
- Data-Shrinking;
- Data Compression;
- Multiplexing: Its Principle and Process;

## M1. Part 9: Voice Over IP Concepts (2)

- Multiplexing-Let's Share;
- Interoperability-Protocols and Architectures;
- Protocols-A Common Set of Rules;
- Architectures-How Devices Fit Together in a Network;
- Types of Networks-LANs, MANs, and WANs;
- LANs-Local Area Networks;
- LAN and WAN Devices-Higher Speeds, Lower Prices;
- Home LANs-Sharing High-Speed Internet Access;
- MANs-Metropolitan Area Networks . . . Links Within Cities;
- WANs-Wide Area Networks . . . Links Between Cities;
- Higher Speed Services for LAN Traffic;
- Carrier and Internet Service Provider Networks.

## **M1. Part 10: VoIP Systems, Circuit Switched PBXs and Cabling (1)**

- Telephone Systems-Voice over IP, PBXs, and Centrex Systems;
- What Is a Private Branch Exchange (PBX)?
- IP PBXs for the Enterprise;
- Impetus for Change;
- Architecture of IP-Based Systems . . . How the Pieces Fit Together;
- Voice Quality and Security;
- Barriers to Acceptance of Voice over IP;
- Endpoints-IP Telephones Connected to Layer 2 Switches;
- PBX Trunks-Switch-to-Switch Connectivity;
- Demarcation-The Location at Which Telcos Wire Trunks;
- Circuit Switched PBXs-Proprietary Platforms;
- Centrex-Telephone Company Supplied Service.

## **M1. Part 11: VoIP Systems, Circuit Switched PBXs and Cabling (2)**

- IP Centrex-Phone Companies Hosting Voice Over IP;
- Direct Inward Dialling-Bypassing the Operator for Incoming Calls;
- Key Systems-Multi-featured for Smaller Organizations;
- Hybrid PBX/Key Systems;
- Wireless Options for PBXs;
- Advanced Applications for Telephone Systems;
- Call Accounting-Billing Internal Departments;
- Call Detail Recording for Carriers-Generating Data for Billing;
- Voice Mail-Storing and Retrieving Messages;
- Voice Mail Components;
- Unified Messaging Integration of Voice Mail, Fax Mail, and E-mail;
- Unified Messaging Systems on the LAN;
- Multi-application Platforms in Carrier Networks;
- Speech Recognition.





# Module 2 Mobile Communications.

## M2. Part 1: 3GPP Mobile Communications: GSM

- Development of GSM;
- Specification of GSM;
- Architecture of GSM;
- Functionality of GSM;
- Numbering of GSM;
- GSM Data;
- Dual Half Rate;
- DFCA;
- EDGE;
- DLDC;
- EDGE2.

## M2. Part 2: 3GPP Mobile Communications: WCDMA and HSPA

- Network Architecture;
- Physical Layer Aspects;
- Radio Interface Procedures;
- WCDMA/HSPA Evolution since Release;
- Planning and Dimensioning of WCDMA/HSPA Networks.

## M2. Part 3: 3GPP Mobile Communications: LTE/SAE and LTE-A (1)

- Architecture;
- Elements;
- Evolved Universal Terrestrial Radio Access Network;
- Interfaces;
- Protocol Stacks;

- Layer 2 Structure;
- LTE Radio Network;
- LTE Spectrum;
- Physical Layer.

### **M2. Part 4: 3GPP Mobile Communications: LTE/SAE and LTE-A (2)**

- SC-FDM and SC-FDMA;
- Frame Structure and Physical Channels;
- Physical Layer Procedures;
- User Mobility;
- Radio Resource Management Procedures;
- Link Adaptation;
- ICIC;
- Reporting;
- LTE Radio Resource Management;
- RRM Principles and Algorithms Common to UL and DL;

### **M2. Part 5: 3GPP Mobile Communications: LTE/SAE and LTE-A (3)**

- Uplink RRM;
- Downlink RRM;
- Intra-LTE Handover;
- LTE Release 8/9 Features;
- LTE-Advanced Features;
- LTE Transport and Core Network;
- Transport Network;
- Core Network;
- Charging.

## **M2. Part 6: Wireless LAN and Evolution**

- WLAN Standards;
- IEEE 802.11 (Wi-Fi);
- IEEE 802.16 (WiMAX);
- Evolved IEEE 802.16 (4G);
- Comparison of Wireless Technologies.



## **M3. Part 1: Salient Communication Issues: Network Connectivity**

- End-Users, Nodes, and Connectivity;
- Telephone Numbering and Routing;
- Use of Tandem Switches in a Local Area Connectivity;
- Busy Hour and Grade of Service;
- Simplex, Half-Duplex, and Full Duplex;
- One-Way and Two-Way Circuits;
- Network Topologies;
- Variations in Traffic Flow;
- Quality of Service;
- Standardization in Telecommunications;
- Organization of the PSTN in the United States;
- Points of Presence.

## **M3. Part 2: Signals as Conveyers of Intelligence**

- Signals in Everyday Life;
- Salient Concepts of Electricity for Communications;
- Early Sources of Electrical Current;

- Electrical Telegraph: An Early Form of Long Distance Communications; What Is Frequency?
- Electrical Signals;
- Signal Transmission;
- Modulation;
- Binary Digital Signals;
- Transporting Electrical Signals;
- Wire Pair;
- Coaxial Cable Transmission;
- Fibre Optic Cable;
- Radio Transmission.

### **M3. Part 3: Quality of Service and Telecommunications Impairments**

- Quality of Service: Voice, Data, and Image;
- Signal-to-Noise Ratio;
- Voice Transmission;
- Data Circuits;
- Video (Television);
- Three Basic Impairments and How They Affect the End-User;
- Amplitude Distortion;
- Phase Distortion;
- Level 53 3.4;
- Typical Levels 53 3.5 Echo and Singing.

### **M3. Part 4: Transmission and Switching: Cornerstones of a Network (1)**

- Transmission and Switching Defined;
- Traffic Intensity Defines the Size of Switches and the Capacity of Transmission Links;
- Traffic Studies;
- The Erlang and Poisson Traffic Formulas;

- Waiting Systems (Queueing);
- Dimensioning and Efficiency;
- Quantifying Data Traffic;
- Switching;
- Basic Switching Requirements;
- Concentration and Expansion.

### **M3. Part 5: Transmission and Switching: Cornerstones of a Network (2)**

- Essential Functions of a Local Switch;
- Some Introductory Switching Concepts;
- Early Automatic Switching Systems;
- Common Control (Hard-Wired);
- Stored Program Control;
- Concentrators and Remote Switching;
- Some Essential Concepts in Transmission;
- Two-Wire and Four-Wire Transmission;
- Multiplexing;
- Definition of the Frequency Division Multiplex;
- Pilot Tones.

### **M3. Part 6: Transmission Aspects of Voice Telephony**

- Definition of the Voice Channel;
- Human Voice;
- Operation of a Telephone Subset;
- Subset Mouthpiece or Transmitter;
- Telephone Earpiece or Receiver;
- Subscriber Loop Design;
- Basic Design Considerations;
- Subscriber Loop Length Limits;
- Designing a Subscriber Loop;



- Extending the Subscriber Loop;
- “Cookbook” Design Methods for Subscriber Loops;
- Current North American Loop Design Rules;
- Design of Local Area Wire-Pair Trunks (Junctions).

### **M3. Part 7: Digital Networks (1)**

- Digital Transmission;
- Two Different PCM Standards;
- Basis of Pulse Code Modulation;
- Sampling;
- Quantization;
- Coding;
- PCM System Operation;
- PCM System Enhancements;
- Enhancements to DS1;
- Enhancements to E1;
- Higher-Order PCM Multiplex Systems;

### **M3. Part 8: Digital Networks (2)**

- Stuffing and Justification;
- North American Higher-Level Multiplex;
- European E1 Digital Hierarchy;
- Long-Distance PCM Transmission;
- Transmission Limitations;
- Jitter and Wander;
- Distortion;
- Thermal Noise;
- Crosstalk.

### **M3. Part 9: Digital Networks (3)**

- Digital Loop Carrier;
- New Versions of DSL;
- Digital Switching;
- Advantages and Issues of Digital Switching;
- Approaches to PCM Switching;
- Review of Some Digital Switching Concepts;
- Digital Network;
- Technical Requirements of the Digital Network;
- Digital Network Performance Requirements.

### **M3. Part 10: Signalling (1)**

- What Is the Purpose of Signalling?
- Defining the Functional Areas;
- Supervisory Signalling;
- Address Signalling;
- Call Progress—Audible-Visual;
- Signalling Techniques;
- Conveying Signalling Information;
- Evolution of Signalling;
- Subscriber Call Progress Tones and Pushbutton Codes (North America);
- Compelled Signalling;

### **M3. Part 11: Signalling (2)**

- Concepts of Link-by-Link and End-to-End Signalling;
- Effects of Numbering on Signalling;
- Associated and Disassociated Channel Signalling;
- Signalling in the Subscriber Loop;
- Metallic Trunk Signalling;
- Basic Loop Signalling;
- Reverse-Battery Signalling.

### **M3. Part 12: Local and Long-Distance Networks (1)**

- Makeup of the PSTN;
- Evolving Local Network;
- What Affects Local Network Design?
- Design of Long-Distance Networks;
- Three Design Steps;
- Link Limitation;
- Numbering Plan Areas;
- Exchange Location;
- Hierarchy;
- Network Design Procedures.

### **M3. Part 13: Local and Long-Distance Networks (2)**

- Traffic Routing in a National Network;
- New Routing Techniques;
- Logic of Routing;
- Call-Control Procedures;
- Applications;
- Transmission Factors in Long-Distance Telephony;
- Transmission Design to Control Echo and Singing;
- Transmission-Loss Engineering;
- Loss Plan for Digital Networks (United States).

### **M3. Part 14: Concepts in Transmission Transport (1)**

- Radio Systems;
- Scope;
- Radio Transmission;
- Line-of-Sight Microwave;
- Fades, Fading and Fade Margins;
- Diversity and Hot-Standby;
- Frequency Planning and Frequency Assignment;



- Satellite Communications.

### **M3. Part 15: Concepts in Transmission Transport (2)**

- Satellite;
- Three Basic Technical Problems;
- Frequency Bands: Desirable and Available;
- Multiple Access to a Communication Satellite;
- Earth Station Link Engineering;
- Digital Communication by Satellite;
- Very Small Aperture Terminal (VSAT) Networks;
- Fibre Optic Communication Links;
- Applications.

### **M3. Part 16: Concepts in Transmission Transport (3)**

- Optical Fibre as a Transmission Medium;
- Types of Optical Fibre;
- Splices and Connectors;
- Light Sources;
- Light Detectors;
- Optical Fibre Amplifiers;
- Wavelength Division Multiplexing;
- Fibre Optic Link Design;
- Coaxial Cable Transmission Systems;
- Cable Characteristics;
- Transmission Media.

### **M3. Part 17: Data Communications (1)**

- The Bit: A Review;
- Removing Ambiguity: Binary Convention;
- Coding;
- Errors in Data Transmission;



- Nature of Errors;
- Error Detection and Correction;
- Nature of Data Transmission;
- Loops;
- Neutral and Polar Dc Data Transmission Systems;
- Binary Transmission and the Concept of Time.

### **M3. Part 18: Data Communications (2)**

- Asynchronous and Synchronous Transmission;
- Digital Data Waveforms;
- Data Interface: The Physical Layer;
- Digital Transmission on an Analog Channel.

### **M3. Part 19: Data Communications (3)**

- Modulation–Demodulation Schemes;
- Critical Impairments to the Transmission of Data;
- Channel Capacity;
- Modem Selection Considerations;
- Equalization;
- Data Transmission on the Digital Network;
- What Are Data Protocols?
- The Basic Protocol Functions;
- Open Systems Interconnection;
- High-Level Data Link Control: A Typical Link-Layer Protocol.

### **M3. Part 20: Enterprise Networks I: Local Area Networks**

- What Do Enterprise Networks Do?
- Local Area Networks (LANs);
- LAN Topologies;
- Baseband LAN Transmission Considerations;
- Overview of ANSI/IEEE LAN Protocols;

- LAN Protocols Relate to OSI;
- Logical Link Control;
- LAN Access Protocols;
- CSMA and CSMA/CD Access Techniques;
- Token Ring;
- Fibre Distributed Data Interface;
- LAN Interworking via Spanning Devices;
- Repeaters;
- LAN Bridges;
- Routers;
- Hubs and Switching Hubs.

### **M3. Part 21: Enterprise Networks II: Wide Area Networks (1)**

- Wide Area Network Deployment;
- Introductory Comments;
- Packet Data Communications Based on CCITT Rec. X.25
- CCITT Rec. X.25;
- Architecture and Its Relationship to OSI;
- Tracing the Life of a Virtual Call;
- TCP/IP and Related Protocols;
- Integrated Services Digital Network (ISDN).
- ISDN Structures;
- User Access and Interface Structures;
- ISDN Protocols and Protocol Issues;
- ISDN Networks;
- ISDN Protocol Structures.

### **M3. Part 22: Enterprise Networks II: Wide Area Networks (2)**

- Primary Rate Interfaces;
- Overview of Layer 2, ISDN D-Channel, LAPD Protocol;
- Overview of Layer;
- ISDN Packet Mode Review;



- Speeding Up the Network: Frame Relay;
- Rationale and Background;
- Genesis of Frame Relay;
- Frame Relay Operation;
- Frame Structure;
- Traffic and Billing on a Frame Relay Network;
- Congestion Control: A Discussion;
- Quality of Service Parameters.

### **M3. Part 23: CCITT Signalling System (1)**

- Overview of SS No. 7 Architecture;
- Relationship to OSI;
- Signalling System Structure;
- Signalling Network Management;
- Signalling Data Link Layer (Layer 1);
- Signalling Link Layer (Layer 2);
- Basic Signal Unit Format;
- Error Detection;
- Error Correction;
- Flow Control;
- Basic Signal Unit Format;
- Signalling Network Functions and Messages (Layer 3).

### **M3. Part 24: CCITT Signalling System (2)**

- Signalling Message-Handling Functions;
- Signalling Network Structure;
- International and National Signalling Networks;
- Signalling Performance: Message Transfer;
- Basic Performance Parameters;
- Traffic Characteristics;
- Transmission Parameters;
- Signalling Link Delays over Terrestrial and Satellite Links;

### **M3. Part 25: CCITT Signalling System (3)**

- Numbering Plan for International Signalling Point Codes;
- Signalling Connection Control Part (SCCP);
- Services Provided by the SCCP;
- Peer-to-Peer Communication;
- Connection-Oriented Functions: Temporary Signalling Connections;
- Structure of the SCCP;
- User Parts;
- Telephone User.

### **M3. Part 26: Image Communications (1)**

- Appreciation of Video Transmission;
- Additional Definitions;
- Composite Signal;
- Critical Video Parameters;
- Transmission Standard Level;
- Other Parameters;
- Video Transmission Standards (Criteria for Broadcasters);
- Colour Transmission;
- Standardized Transmission Parameters (Point to-Point TV);
- Methods of Program Channel Transmission;
- Transmission of Video over LOS Microwave;
- Bandwidth of the Baseband and Baseband Response;
- Reemphasis.



### **M3. Part 27: Image Communications (2)**

- Differential Gain;
- Differential Phase;
- Signal-to-Noise Ratio (10 kHz to 5 MHz);
- Continuity Pilot;
- TV Transmission by Satellite Relay;
- Digital Television;
- Basic Digital Television;
- Bit Rate Reduction and Compression Techniques;
- Overview of the MPEG-2 Compression Technique;
- Conference Television;
- Introduction 434 14.10.2 pX64 Codec;
- Frame Transport for Video Conferencing.

### **M3. Part 28: Community Antenna Television (Cable Television) (1)**

- Evolution of CATV;
- Early System Layouts;
- System Impairments and Performance Measures;
- dBmV and Its Applications;
- Thermal Noise in CATV Systems;
- Signal-to-Noise (S/N) Ratio versus Carrier to-Noise (C/N) Ratio in CATV Systems;
- Problem of Cross-Modulation ( $X_m$ );
- Gains and Levels for CATV Amplifiers;
- Underlying Coaxial Cable System;
- Taps;
- Hybrid Fibre-Coax (HFC) Systems;
- Design of the Fibre Optic Portion of an HFC System.



### **M3. Part 29: Community Antenna Television (Cable Television) (2)**

- Digital Transmission of CATV Signals;
- Transmission of Uncompressed Video on CATV Trunks;
- Compressed Video;
- Two-Way CATV Systems;
- Impairments Peculiar to Upstream Service;
- Two-Way Voice and Data over CATV Systems According to the IEEE;
- Committee Standard;
- General;
- Overview of the Medium Access Control;
- Overview of the Physical Layer;
- Other General Information;
- Medium Access Control;
- Physical Layer Description;
- Upstream Physical Layer Specification.

### **M3. Part 30: Cellular and PCS Radio Systems (1)**

- Basic Concepts of Cellular Radio;
- Radio Propagation in the Mobile Environment;
- Propagation Problem;
- Propagation Models;
- Impairments: Fading in the Mobile Environment;
- Diversity: A Technique to Mitigate the Effects of Fading and Dispersion;
- Cellular Radio Path Calculations;
- Cellular Radio Bandwidth Dilemma;
- Background and Objectives;
- Bit Rate Reduction of the Digital Voice Channel;
- Network Access Techniques.

### **M3. Part 31: Cellular and PCS Radio Systems (2)**

- Frequency Division Multiple Access;
- Time Division Multiple Access;
- Code Division Multiple Access (CDMA);
- Frequency Reuse;
- Personal Communication Services;
- Defining Personal Communications;
- Narrowband Microcell Propagation at PCS Distances.

### **M3. Part 32: Cellular and PCS Radio Systems (3)**

- Cordless Telephone Technology;
- North American Cordless Telephones;
- European Cordless Telephones;
- Wireless LANs;
- Mobile Satellite Communications;
- Background and Scope;
- Two Typical LEO Systems;
- Advantages and Disadvantages of LEO Systems.

### **M3. Part 33: Advanced Broadband Digital Transport Formats**

- SONET;
- Synchronous Signal Structure;
- Line Rates for Standard SONET Interface Signals;
- Add-Drop Multiplex;
- Synchronous Digital Hierarchy;
- SDH Standard Bit Rates;
- Interface and Frame Structure of SDH.





### **M3. Part 34: Asynchronous Transfer Mode (1)**

- Evolving Toward ATM;
- The ATM;
- User–Network Interface and Architecture;
- ATM Cell: Key to Operation;
- ATM Cell Structure;
- Idle Cells;
- Cell Delineation and Scrambling;
- ATM Layering and B-ISDN;
- Physical Layer.

### **M3. Part 35: Asynchronous Transfer Mode (2)**

- ATM Layer;
- ATM Adaptation Layer;
- Services: Connection-Oriented and Connectionless;
- Functional Architecture;
- B-ISDN/ATM Routing and Switching;
- Virtual Channel Level;
- Virtual Path Level;
- Signalling Requirements;
- Setup and Release of VCCs;
- Signalling Virtual Channels;
- Quality of Service.

### **M3. Part 36: Asynchronous Transfer Mode (3)**

- ATM Quality of Service Review;
- Selected QoS Parameter Descriptions;
- Traffic Control and Congestion Control;
- Transporting ATM Cells;
- Mapping;
- E1 Mapping;



- Mapping ATM Cells into SDH;
- Mapping ATM Cells into SONET.

### **M3. Part 37: Fundamentals of Electricity with Telecommunications Applications (1)**

- Electricity;
- Electromotive Force and Voltage;
- Resistance;
- Ohm's Law;
- Voltages and Resistances in a Closed Electric Circuit;
- Resistance of Conductors;
- Resistances in Series and in Parallel, and Kirchhoff's Laws;
- Kirchhoff's First Law;
- Kirchhoff's Second Law;
- Hints on Solving Dc Network Problems;
- Electric Power in dc Circuits;

### **M3. Part 38: Fundamentals of Electricity with Telecommunications Applications (2)**

- Alternating Current Circuits;
- Magnetism and Magnetic Fields;
- Electromagnetism;
- Inductance and Capacitance;
- What Happens when We Close a Switch on an Inductive Circuit?
- RC Circuits and the Time Constant;
- Alternating Currents;
- Calculating Power in ac Circuits;
- Ohm's Law Applied to Alternating Current Circuits;
- Calculating Impedance;
- Resistance in ac Circuits.

### **M3. Part 39: Mathematics for Telecommunications Applications (1)**

- Symbols and Notation;
- Function Concept;
- Using the Sigma Notation;
- Introductory Algebra;
- Review of the Laws of Signs;
- Conventions with Factors and Parentheses;
- Simple Linear Algebraic Equations;
- Quadratic Equations;

### **M3. Part 40: Mathematics for Telecommunications Applications (2)**

- Solving Two Simultaneous Linear Equations with Two Unknowns;
- Logarithms to the Base;
- Definition of Logarithm;
- Essentials of Trigonometry;
- Definitions of Trigonometric Functions;
- Trigonometric Function Values for Angles Greater than 90°;

### **M3. Part 41: Decibels and Their Applications**

- Decibel Basics;
- dBm and dBW;
- Volume Unit;
- Using Decibels with Signal Currents and Voltages;
- Calculating a Numeric Value Given a dB Value;
- Calculating Watt and Mill Watt Values Given dBW and dBm Values;
- Addition of dBs and Derived Units;
- dB Applied to the Voice Channel;
- Insertion Loss and Insertion Gain;
- Return Loss;
- Relative Power Level: dBm0, pWp0, and so on;
- Definition of Relative Power Level;



- Definition of Transmission Reference Point.



## M4. Part 1: Planning of Communication Systems

### Planning of 2G Networks

- General Planning Guidelines for Fixed Networks;
- Capacity Planning;
- Coverage Planning;
- Frequency Planning;
- Parameter Planning;
- Network Measurements;
- Effects of Data Services on GSM Planning;
- Other Planning Considerations;
- GSM/GPRS Measurement and Simulation Techniques;
- Simulations.

## M4. Part 2: Planning of Advanced 3G Networks

- Radio Network Planning Process;
- Nominal Network Planning;
- Capacity Planning;
- Coverage Planning;
- Self-Optimizing Network;
- Parameter Planning.

### **M4. Part 3: Planning of Mobile TV Networks**

- High-Level Network Dimensioning Process;
- Detailed Radio Network Design;
- Radiation Limitations;
- Cost Prediction and Optimization 819.

### **M4. Part 4: Planning of Core Networks**

- General Planning Guidelines for Fixed Networks;
- Planning of the Networks;
- Capacity Planning;
- Network Evolution from 2G/3G PS Core to EPC;
- Entering Commercial Phase: Support for Multimode LTE/3G/2G; Terminals with Pre-Release 8 SGSN;
- SGSN/MME Evolution;
- Case Example: Commercial SGSN/MME Offering;
- Mobile Gateway Evolution;
- Case Example: Commercial GGSN/S-GW/P-GW Offering;
- EPC Network Deployment and Topology Considerations;
- LTE Access Dimensioning.

### **M4. Part 5: Management of Communication Systems**

#### **EMF – Radiation Safety and Health Aspects**

- The EMF Question;
- The Scientific Principle and Process: The Precautionary Principle;
- The Expert Organizations and Regulation;
- Some Topics of the EMF Debate;
- SAR;
- The Safety Distance and Installation;
- High-Power Network Planning.



## **M4. Part 6: Deployment and Transition of Telecommunications Systems**

- Why Deploy Wireless Systems?
- Transition of Telecommunications Systems;
- Network Deployments;
- Spectrum Considerations for Network Transition;
- Terminals Support for the Network Transition;
- Evolution of Macro Sites and Deployment of Small Cells;
- Challenges and Possibilities.

## **M4. Part 7: Cellular Technology: Its Historical Development, Societal and Connectivity Implications.**

- The Initiators and Arrival of the 1<sup>st</sup> Generation (1G) System: Fanfare and Disappointments;
- The Role of Next-Generation Systems Program (RINGS);
- 2<sup>nd</sup> Generation (2G)'s Development, Offerings and Limitations;
- 3<sup>rd</sup> generation (3G) Network and its Solutions;
- 4<sup>th</sup> Generation (4G) Network: Level of Advancement and Solutions;
- Beyond 4<sup>th</sup> Generation (4G): 5<sup>th</sup> Generation (5G) Network and the Positive and Negative Issues of its Implementation ;
- 6<sup>th</sup> Generation (6G) Network: Its Promises and Realistic Expectations;
- Progress Towards the Development of the 6<sup>th</sup> Generation Mobile Technologies;
- Main Players in the Development of the 6<sup>th</sup> Generation Mobile Technologies and their Contribution, to Date.

## **M4. Part 8: Wireless Network Measurements**

- Principles of Radio Interface Measurements;
- GSM/GPRS;
- LTE;
- LTE Field Measurements.





## M5. Part 1: Telecommunications Regulation

### Technology in Context

- Information Communications Technologies (ICT) as Social and Economic Enabler;
- Innovative Technologies and Services.

### The Importance of Regulation

- Evolution of Regulatory Reforms;
- Telecommunications Benchmarking Competition.

### Telecommunications Regulatory Organizations

- Elements for an Effective Regulator;
- Structural Independence;
- Financial Independence;
- Functionality;
- Telecommunications Organizational and Institutional Approaches to Regulation.

### Telecommunications International Frameworks

- Multilateral Commitments;
- Regional Initiatives and Frameworks.

## **M5. Part 2: Telecommunications Regulation for Effective Communication**

### **Telecommunications Competitive Markets**

- Benefits of Competition;
- Forms of Competition.

### **Sector Regulation and Competition Law**

- Competition Policy;
- Regulation;
- *Ex Ante* and *Ex Post* Regulation;
- The role of competition authorities and regulators;
- Regulatory Forbearance.

### **Telecommunications Competition Analysis**

- Telecommunications Markets and Market Definition;
- Market Power;
- Telecommunications Barriers to Entry;
- Common Forms of Anti-Competitive Conduct;
- Remedies for Anti-Competitive Conduct.

### **Control of Mergers and Acquisitions**

- Horizontal Mergers;
- Vertical Mergers;
- Joint Ventures.

### **Regulating Telecommunications Prices**

- Why Regulate Prices?
- Measuring Costs;
- Methods of Price Regulation;
- Benchmarking Prices.





## **M5. Part 3: Growing the Market: Licensing and Authorizing Services (1)**

- The Trend towards General Authorization;
- Licensing Objectives and Types;
  - Licensing Objectives and Policies
  - License Types.
- Competing for Telecommunications Licenses:
  - The Competitive Licensing Process;
  - Scheduling the Licensing Process;
  - The Guide to the Licensing Process;
  - The Pre-Qualification Phase;
  - The Qualification Phase;
  - Selection Process;
  - Fees.

## **M5. Part 4: Growing the Market: Licensing and Authorizing Services (2)**

- Telecommunications Authorization Principles and Procedures;
- Special Authorization Situations:
  - Public-Private Partnerships and Concessions;
  - Reauthorization of Incumbent Service Providers.
- Licensing for Convergence:
  - Unified and Multi-Service Licensing;
  - Lifting Restrictions on Licensees.
- Global Standards Making and Compliance:
  - The Need for Standards;
  - Bridging the Standards Divide;
  - Standards and ICT Accessibility.



## **M5. Part 5: Going Mobile: Managing the Spectrum**

### **Changing Demands for Spectrum**

- The Radio Spectrum as Valuable Resource;
- The Need for Spectrum Management?
- Economic and Technical Objectives;
- National and international planning;
- Traditional Approaches and Recent Innovations;
- Transparent Regulation and Processes.

### **Spectrum Planning and Technical Standards**

- Spectrum Planning;
- Technical Standards.

### **Mechanisms for Assigning and Pricing Spectrum**

- Spectrum Authorization;
- Regulatory Strategies for Allocation and Assignment;
- Technical Aspects of Assignment;
- Methods for Assignment;
- License Conditions;
- Spectrum Pricing.

### **Monitoring Spectrum**

- Spectrum Efficiency;
- License Compliance;
- Resolving Interference Problems;
- Management Approaches;
- Spectrum Monitoring Technology;
- Designing Spectrum Monitoring Systems;
- Enforcing License Requirements.

### **Flexibility in Spectrum Management**

- Spectrum Trading;
- Unlicensed Spectrum;
- The Digital Dividend.



## **M5. Part 6: From Capacity to Connectivity: Network Access and Interconnection**

- Access and Interconnection:
  - Defining Interconnection?
  - The importance of access and interconnection;
  - The Need for Regulation.
- Forms of Interconnection:
  - One-way and two-way interconnection;
  - Asymmetric interconnection;
  - IP Interconnection;
  - Unbundling;
  - Sharing Infrastructure;
  - Mobile Networks;
  - Negotiating Agreements.

## **M5. Part 7: From Capacity to Connectivity: Network Access and Interconnection**

- Setting Interconnection Prices:
  - Why is the Interconnection Price Important?
  - Long-Run Incremental Cost Modelling;
  - Benchmarking Interconnection Rates;
- Cross-border Interconnection:
  - The Accounting Rate System;
  - International Mobile Roaming;
- New Paradigms and New Challenges:
  - VoIP;
  - Enhancing Public Safety;
  - Other Challenges for Developing Countries.
- Dispute Resolution.



## **M5. Part 8: From Availability to Use: Universal Access and Service**

- Policy Rationale:
  - Concepts and Definition;
  - Rationale;
  - Access Gaps and Required Intervention;
  - Scope.
- Types of Universal Service Regimes:
  - Traditional Approaches to Universal Service;
  - Competing for Subsidies and Funds;
  - Non-government and Community Initiatives.
- Reforming Universal Access:
  - Changing Contexts and Trends;
  - Technologies for UAS.
- Strategies for Developing Economies:
  - Developing UAS policy.
- Digital Literacy and e-Inclusion.

## **M5. Part 9: A Digital Future: Regulatory Challenges (1)**

- Convergence, Ubiquity, and Web 2.0:
  - Convergence of Communications Media;
  - Ubiquity: Mass Communication for the Masses;
  - The Rise of Social Networking and Web 2.0;
  - Self-Regulation and Netiquette.
- Regulating Digital Content:
  - First Principles: How Much Freedom of Expression?
  - The New Age of Broadcasting: The End of Scarcity?
  - What to Regulate: The Dark Side of the Web;
  - How (and Whom) to Regulate: Challenges of Policing Cyberspace.




## M5. Part 10: A Digital Future: Regulatory Challenges (2)

- Balancing Intellectual Property Rights:
  - Copyright Protection: Combating Piracy on the Digital Seas;
  - Digital File Sharing: Peer-to-Peer Rights and Wrongs;
  - Consumer as Creator: Fair Use, Creative Commons.
- Neutrality of Access:
  - Net Neutrality: Clash of the Titans;
  - Technology and Service Neutrality: Avoiding Picking Winners.
- Protecting Privacy:
  - Protecting consumers in the commercial digital space;
  - Curtailing Big Brother: Protecting Citizen Privacy.


## M5. Part 11: A Digital Future: Regulatory Challenges (3)

- Cybersecurity Concerns:
  - Virtual Vulnerability: Security of Networks and Infrastructure;
  - National Security and Civil Rights: What Should be the Boundaries?
  - The War Against Malware.
- Green ICT:
  - The Nexus Between Communication and Conservation;
  - Cyber Waste, Digital Trash.
- Regulation in a Global Era:
  - Cross Border Governance;
  - Cooperation across Sectors and Boundaries.






**HRODC Postgraduate Training Institute.**  
**Regulation For The Awards of:**  
**\* Postgraduate Diploma;**  
**\* Postgraduate Certificate; &**  
**\* Diploma – Postgraduate.**



**Diploma – Postgraduate; PG Cert.; &**  
**Postgraduate Diploma Awards**

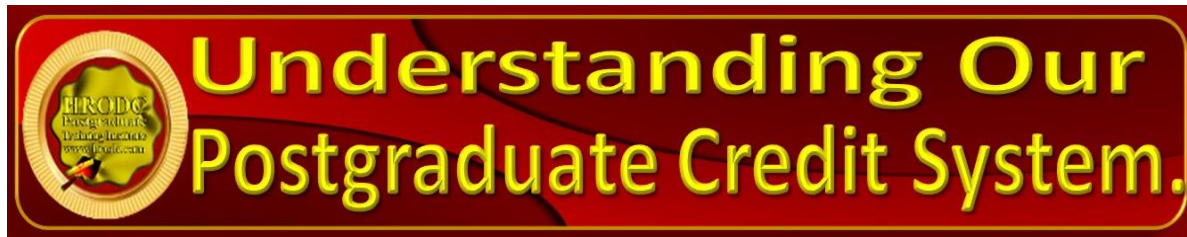
Postgraduate Short Courses are of a minimum of five days' Classroom-Based (10 days' Video-Enhanced Online) but less than 6 weeks' Classroom-Based (less than 10 weeks' Video-Enhanced Online) duration, are referred to as Diploma – Postgraduate. This means that they are postgraduate credits, towards a Postgraduate Certificate and Postgraduate Diploma. Postgraduate Certificate and Postgraduate Diploma represent Programmes of Study, leading or accumulating to Awards bearing their title prefixes. While we, refer to our short studies, detailed above, as 'Courses', those with duration of 6 weeks or 12 weeks In-Classroom (10- and 20-weeks' Video-Enhanced Online) are labelled 'Programmes'. Nevertheless, we conform to popular usage, by often referring to all study durations as 'Courses'. A mark of distinction, though, is that participants in a short course are referred to as 'Delegates', as opposed to the ascription 'Students', which is confined to those studying a Postgraduate Programme.

In line with the above notion, a Postgraduate Certificate might be earned through a 6 weeks' Intensive Classroom-Based Study, or 10 weeks' Video-Enhanced, or Face-To-Face, Online Delivery. Similarly, a Postgraduate Diploma might be studied for 12 weeks In-classroom or 20 weeks Video-Enhanced Face-To-Face. They might also be taken through a blend of both modes, providing that a minimum of 6 and 12 Credits and 180 or 360 Credit-Hours, respectively, are earned. You might Pick and Mix Courses, to create your preferred blend of Disciplines, or follow a predesigned Specialist route. They might accumulate from our Postgraduate Short Courses, or



**HRODC Postgraduate Training Institute, A Postgraduate-Only Institution**  
**HQ: 122A Bhylls Lane, Wolverhampton, WV3 8DZ, West Midlands, UK**  
**Primary Website = <https://www.hrodc.com>**  
**Prof. Dr. R. B. Crawford, Director.**

through continuous study. [Please click to view and download our List of Specialist Postgraduate Certificate, and Postgraduate Diploma Programmes](#)

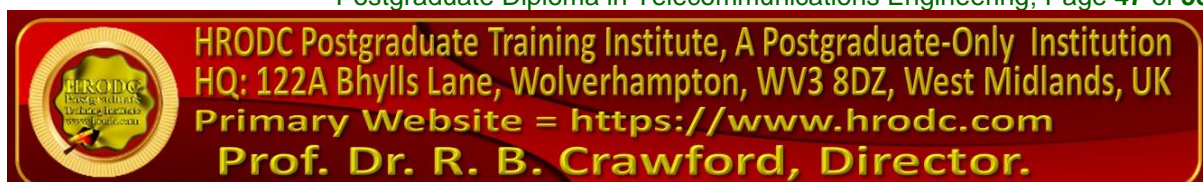


### Credit-Hours and Credit-Values, in Diploma – Postgraduate - Award

Credit-Hours are the actual amount of time that a lecturer or tutor spends with his or her students or delegates, in both Classroom-based and Video-Enhanced Deliveries. Each Five-Day Classroom-Based, or a Ten-Day Video-Enhanced (3 hours per day) Course consists of 30 Credit-Hours, while a 6-Day Classroom-based (12day Video-Enhanced) course amounts to 36 Credit-Hours. Because Credit-Values are calculated in multiples of 30 Credit-Hours, 60-89 Credit-Hours have a Double-Credit (2 Credit) value, while 90 Credit-Hours earn a Triple-Credit (3 Credits).

A delegate who successfully completes a Postgraduate Short Course of 30 or more Credit-Hours, but which is less than 180 Credit-Hours (Postgraduate Certificate), is awarded a Diploma – Postgraduate. This Award is assigned Credit-Values and Credit-Hours, as are exemplified by the following:

1. Diploma – Postgraduate – in Organisational Change Management, 30 Credit-Hours;
2. Diploma - Postgraduate - in Trainer Training: Training for Trainers, Double-Credit, 60 Credit-Hours:
3. Conveyancing and Property Valuation: Property Law, Double-Credit, 72 Credit-Hours:
4. Diploma – Postgraduate – in University and Higher Education Administration, Triple-Credit, 90 Credit-Hours;



5. Diploma – Postgraduate – in Tourism and International Relations, Quad-Credit, 120 Credit-Hours.

As in the first example, above, where the Credit-Value is not noted in an Award, it must be assumed that it is a Single-Credit Value.

### Postgraduate Diploma Award

A Postgraduate Diploma Award is achieved with a minimum of 360 Credit-Hours, through continuous study, or an accumulation of Credit-Hours.

### Postgraduate Certificate Award

A Postgraduate Certificate might be gained with a minimum of 180 Credit-Hours, through continuous study or Credit-Hours' accumulation.

### Cumulative Postgraduate Certificate, and Postgraduate Diploma Awards

All Postgraduate Short Courses accumulate to a Postgraduate Certificate and a Postgraduate Diploma, on a 'Pic and Mix' or Specialist basis. This means that we maintain academic records for each delegate, indicating the courses studied, with their Credit-Value and Credit-Hours, as are indicated above, '**Credit-Hours and Credit-Values, in Diploma – Postgraduate – Award**'. The Credit-Hours are aggregated to accumulate to at least 180 and 360 Credit-Hours, for a Postgraduate Certificate and a Postgraduate Diploma, respectively. Each Short Course Award (below a Postgraduate Certificate) indicates both its Credit-Value and Credit-Hours, excepting for Single-Credit.





## Accumulated Postgraduate Certificate, and Postgraduate Diploma Awards

All Specialist Postgraduate Certificate and Postgraduate Diploma Programmes have predetermined Award Titles. Delegates who do not follow a specialism, for accumulation to a Postgraduate Certificate and Postgraduate Diploma, receive a Generalist, rather than a Specialist, Award. However, a Specialist Award is given to delegates who studied at least seventy percent (70%) of their courses in a specialist grouping, as are exemplified above, under the heading **'Postgraduate Diploma and Postgraduate Certificate Specialist Award Titles'**.

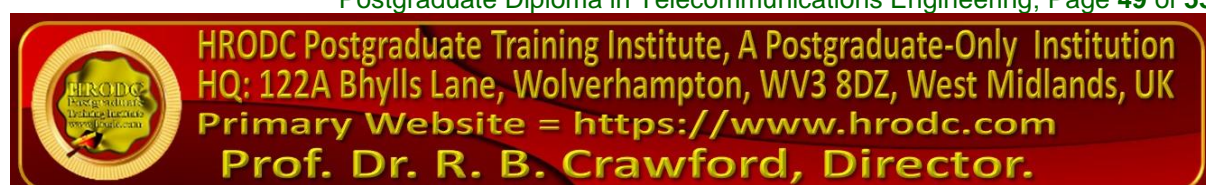


Applicants for Diploma – Postgraduate; Postgraduate Certificate; and Postgraduate Diploma are required to submit the following documents:

- Completed Postgraduate Application Form, including a passport sized picture affixed to the appropriate section;
- A copy of Issue and Photo (bio data) page/s of the applicant's current valid passport or copy of 'Photo-embedded' National Identity Card;
- Copies of credentials stated in the Application Form.

## Admission and Enrolment Procedure

- On receipt of all the above documents, they will be forwarded to our 'Admissions Committee', which will assess applicants' suitability for the Course or Programme for which they have applied;
- If they are accepted on their chosen Course or Programme, they will be notified accordingly, and sent Invoices;

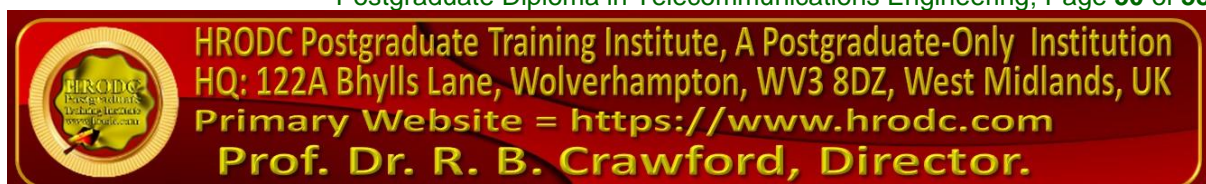


- Upon receipt of an applicant's payment, we will send him or her an Official Payment Receipt, and Admission Letter, bearing a copy of the Passport-Type in the respective Application Form.
- Those intending to study in a foreign country, and require a Visa, will be sent the necessary **Immigration Documentation**, to support their application;
- **Joining Instruction** will be sent to Students and Delegates, on time to prepare for their enrolment. The incorporated information include:
  - Venue Name, Location, with specific address;
  - Details of Airport Transfer, where appropriate;
  - Start date and time;
  - Registration details;
  - Daily Schedule;
  - Local Transportation Details;
  - Residential Accommodation Details;
  - Leisure and Shopping Facilities, in the area;
  - General Security Information; among others.



Because of the intensive nature of our Courses and Programmes, for In-Classroom, and Video-Enhanced Online modes, assessment will take place during or at the end of the **'active teaching period'**, adopting differing formats. These structures include, but are not limited to:

- In-Class Tests;
- Text-Case Analyses;
- Video-Case Analyses;
- 'Out-of-Class' Assignments;
- Individual Presentations;
- Group Presentations; and
- End of Course Examinations.



Based on these assessments, successful candidates will receive either a:

- Diploma – Postgraduate - Award;
- Postgraduate Certificate Award; or
- Postgraduate Diploma Award.

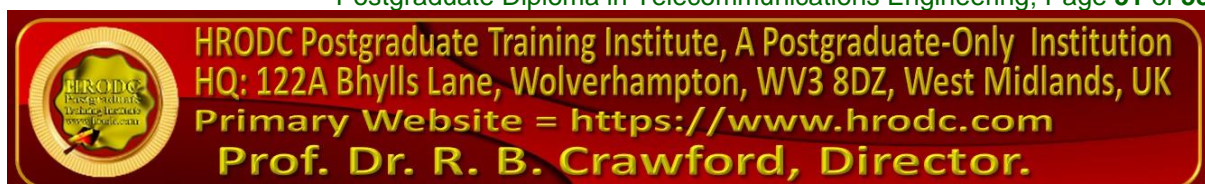
For all the above Awards, a minimum of 70% overall pass is expected. To receive the Awards of Postgraduate Certificate and Postgraduate Diploma, candidates must have accumulated at least the required minimum 'Credit-Hours', with a pass (of 70% and above) in at least 70% of the courses taken.

Delegates and students who fail to achieve the requirement for Postgraduate Certificate, Postgraduate Diploma, or Diploma - Postgraduate - will be given support for 2 re-submissions for each course. Those delegates who fail to achieve the assessment requirement for the Postgraduate Diploma or Diploma - Postgraduate - on 2 resubmissions, or those who elect not to receive them, will be awarded the Certificate of Attendance and Participation.



In a move away from the traditional online courses and embracing recent developments in technology-mediated distance education, HRODC Postgraduate Training Institute has introduced a Video-Enhanced Online delivery. This Online mode of delivery is revolutionary and, at the time of writing, unique to HRODC Postgraduate Training Institute.

You are taught as individuals, on a one-to-one or one-to-small-group basis. You see the tutor face to-face, for the duration of your course. You will interact with the lecturer, ask, and address questions; sitting examinations, in his or her presence. It is as real as any face-to-face lecture and seminar can be. Choose from a wide range of Diploma – Postgraduate - Courses and an increasing number of Specialist Postgraduate Certificate and Postgraduate Diploma Programmes. You might also accumulate Postgraduate Short Courses, via this mode of study, over a 12-year period, towards a Postgraduate Certificate or Postgraduate Diploma.

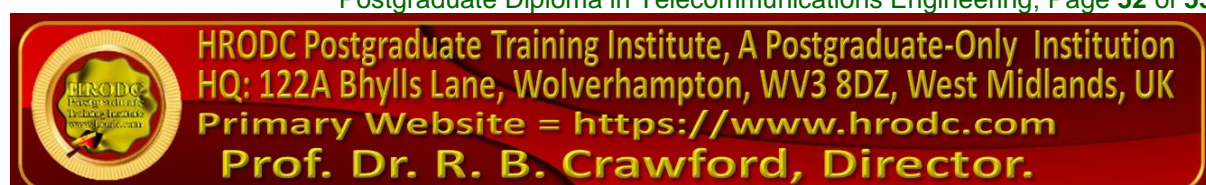


## Key Features of Our Online Study: Video-Enhanced Online

- The tutor meets the group and presents the course, via Video, in a similar way to its classroom-based counterpart;
- All participants can see, and interact with, each other, and with the tutor;
- They watch and discuss the various video cases and demonstrations that form an integral part of our delivery methodology;
- Their assessment is structured in the same way as it is done in a classroom setting;
- The Video-Enhanced Online mode of training usually starts on the 1<sup>st</sup> of each month, with the cut-off date being the 20<sup>th</sup> of each month, for inclusion the following month;
- Its duration is twice the duration of its classroom-based counterpart. For example, a 5-day (30 Credit Hours) classroom-based course will last 10 days, in Video-Enhanced Online mode. This calculation is based on 3 hours tuition per day, adhering to the Institute's required 30 Credit-Hours;
- The cost of the Video-Enhanced Online mode is 67% of similar classroom-based courses;
- For example, a 5-day classroom-based course, which costs Five Thousand Pounds, is only Three Thousand Three Hundred and Fifty Pounds (£3,350.00) in Video-Enhanced Online Mode.



You might study an Online Postgraduate Certificate or Online Postgraduate Diploma, in 10 and 20 weeks, respectively, in the comfort of your office or homes, through HRODC Postgraduate Training Institute's Video-Enhanced Online Delivery. We will deliver the 180 Credit-Hours and 360 Credit-Hours, in line with our **Regulation**, through 'Direct-Lecturer-Contact', within the stipulated timeframe. We aim to fit the tuition around your work, family commitment and leisure, thereby enhancing your



maintenance of an effective 'work-study-life-style balance', at times convenient to you and your appointed tutor.

## **Service Contract, Inc.: Terms and Conditions.**

[Click, or copy and paste the URL, below, into your Web Browser, to view our Service Contract, incorporating Terms and Conditions.](#)

[https://www.hrodc.com/Service\\_Contract\\_Terms\\_and\\_Conditions\\_Service\\_Details\\_Delivery\\_Point\\_Period\\_Cancellations\\_Extenuating\\_Circumstances\\_Payment\\_Protocol\\_Location.htm](https://www.hrodc.com/Service_Contract_Terms_and_Conditions_Service_Details_Delivery_Point_Period_Cancellations_Extenuating_Circumstances_Payment_Protocol_Location.htm)

The submission of our application form or otherwise registration by of the submission of a course booking form or e-mail booking request is an attestation of the candidate's subscription to our Policy Terms and Conditions, which are legally binding.

**You are most Welcome to Visit our Main Website, & SM Pages, to Communicate with, & 'Follow', us.**



**For and on Behalf of:**

**Prof. Dr. R. B. Crawford - Director  
HRODC Postgraduate Training Institute**