HRODC Postgraduate Training Institute

A Postgraduate-Only Institution

#260

Mobile Communications Networks Infrastructure Security Operation

Postgraduate Short Course

Leading To:

DIPLOMA - POSTGRADUATE IN

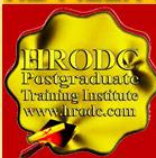## Mobile Communications Networks Infrastructure Security Operation Double Credit, 60 Credit-Hours

Accumulating to A

Postgraduate Certificate, With 120 Additional Credit-Hours, or A

Postgraduate Diploma, With 300 Additional Credit-Hours

HRODC Postgraduate Training Institute
HQ : 122A Bhylls Lane, Castlecroft, Wolverhampton, West Midlands WV3 8DZ, UK

Prof. Dr. Ronald B. Crawford - Director

PhD (Uni London); M. Ed. M (Bristol); PGCIS (UWL); Adv. Dip. Sc. Ed (Bristol); Dip. Doc. Res. (Uni Wlv); F.I.M.S.; HR. S. (I.M.S.); Exec. M. AOM; M. AAM; M.I.S.G.S.; M.S.C.O.S.; M. RG. C.

Course Coordinator:

Prof. Dr. R. B. Crawford is the Director of HRODC Postgraduate Training Institute, A Postgraduate-Only Institution. 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);

➢ 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

For Whom This Course is Designed
This Course is Designed For:

- ➢ Communications Advisor;
- ➢ Communications Analyst;
- ➢ Communications Associate;
- ➢ Communications Consultant;
- ➢ Communications Coordinator;
- ➢ Communications Dispatcher;
- ➢ Communications Electronics Technician;
- ➢ Communications Engineer;
- ➢ Communications Instructor;
- ➢ Communications Officer;
- ➢ 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 Application Developer;
- ➢ Mobile Application Tester;
- ➢ Mobile Network Architect;
- ➢ Mobile Telecommunications Service Operator;
- ➢ Mobile Telephone Handset Manufacturers;
- ➢ Mobile Telephone Handset Retailers;
- ➢ Mobile Telephone Service Providers;
- ➢ Mobile Telephone Service Regulators;
- ➢ Network Administrator Desktop Support;
- ➢ Network Administrator Technician;

- ➢ Network Administrator;
- ➢ Network Analyst;
- ➢ Network Architect;
- ➢ Network Assistant;
- ➢ Network Associate;
- ➢ Network Computer Systems Administrator;
- ➢ Network Consultant;
- ➢ Network Consulting Engineer;
- ➢ Technical Specialist;
- ➢ Technical Support Engineer;
- ➢ Wireless Local Area Network (WLAN) Maintenance Engineers;
- ➢ Wireless Local Area Network (WLAN) Service Provide;
- ➢ Wireless Local Area Network (WLAN) Subscribers.
- ➢ All others concerned with theusage, engineering, design, construction, installation, inspection, operation and, or, maintenance of electrical grounding systems in telecommunications facilities.

Classroom-Based Duration and Cost:	
Classroom-Based Duration:	10 Days
Classroom-Based Cost:	£10,000.00 Per Delegate
Online (Video-Enhanced) Duration and Cost	
Online Duration:	20 Days – 3 Hours Per Day
Online Cost:	£6,700.00 Per Delegate

Classroom-Based Course and Programme Cost includes:

- ➢ Free Continuous snacks throughout the Event Days;
- ➢ Free Hot Lunch on Event Days;
- ➢ Free City Tour;
- ➢ Free Stationery;

➤ Free On-site Internet Access;

➤ Postgraduate Diploma/ Diploma – Postgraduate –or

➤ Certificate of Attendance and Participation – if unsuccessful on resit.

Students and Delegates will be given a Selection of our Complimentary Products, which include:

➤ **Our Branded Leather Conference Folder**;

➤ **Our Branded Leather Conference Ring Binder/ Writing Pad;**

➤ **Our Branded Key Ring/ Chain**;

➤ **Our Branded Leather Conference (Computer – Phone) Bag – Black or Brown**;

➤ **Our Branded 8-16 GB USB Flash Memory Drive**, **with Course Material;**

➤ **Our Branded Metal Pen;**

➤ **Our Branded Polo Shirt**.;

➤ **Our Branded Carrier Bag**.

Daily Schedule: 9:30 to 4:30 pm.

Delivery Locations:

1. **Central London, UK;**
2. **Dubai, UAE;**
3. **Kuala Lumpur, Malaysia;**
4. **Amsterdam, The Netherlands;**
5. **Brussels, Belgium;**
6. **Paris, France; and**
7. **Durban, South Africa;**
8. **Other International Locations, on request.**

Mobile Communications Networks Infrastructure Security Operation Course, Leading to Diploma Postgraduate
- in Mobile Communications Networks Infrastructure Security Operation (Double-Credit), and 60 Credit-Hours,
Accumulating to A Postgraduate Certificate, with 120 Additional Credit-Hours, a Postgraduate Diploma, with -
300 Additional Credit-Hours

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Course Contents, Concepts and Issues

Evolution and Components of Mobile Communications

Part 1 - The First Mobile Generations (1G to 2.5G)

➢ The First Operational Cellular Communication;

➢ The Second (2G) Generation of the Wireless Mobile Network:

- Global Systems for Mobile Communication (GSM).

  - Specification of Global Systems for Mobile Communication (GSM);

  - Architecture of GSM – Mobile Station (MS), Base Station Subsystem (BSS), Network and Switching Subsystem (NSB), Operating Subsystem (OSS);

  - Functionality of Global Systems for Mobile Communication (GSM);

  - Global Systems for Mobile Communication (GSM) Services.

- Frequency Division Multiple Access (FDMA);

- Time Division Multiple Access (TDMA) Scheme;

- Code Division Multiple Access (CDMA) Technology;

- Dynamic Frequency and Channel Allocation(DFCA).

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Part 2 - Wireless Second and Half Generation (2.5G)

- General Packet Radio Service (GPRS); and
- European Telecommunications Standards Institute (ETSI);
- General Packet Radio Service (GPRS) Architecture;
- The General Packet Radio Service (GPRS) Network Infrastructure
- General Packet Radio Service (GPRS)/GSM Network Interfaces
- General Packet Radio Service (GPRS) Services;
- General Packet Radio Service (GPRS) Applications
- Wireless Application Protocol (WAP).

Part 3 - Third Mobile Generations (3G) Networks

- Third Generation Partnership Program (3GPP);
- 3G Specifications;
- 3G Wireless;
- 3G Systems;
- Mobile Telecommunications System (UMTS);
- International Mobile Telecommunications-2000 (IMT-2000);
- Wideband Code Division Multiple Access (W-CDMA);
- Third Generation Partnership Project (3GPP) Release 99;
- Third Generation Partnership Project (3GPP) Release 2000;
- High Speed Downlink Packet Access (HSDPA);
- Mobile Telecommunications System (UMTS) Architecture;
  - The Mobile Station (MS);
  - The access network (UTRAN);
  - The core network (CN).
- Mobile Telecommunications System (UMTS) Services;
- Enhanced Data GSM Environment (EDGE).

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Part 4 - WiMAX (Worldwide Interoperability for Microwave Access) and Short Range Wireless Network

➢ Orthogonal Frequency Division Multiple Access (OFDMA);

➢ Worldwide Interoperability for Microwave Access (WiMAX) Architecture;

➢ Wireless Local Area Networks (WLAN);

➢ Wireless Personal Area Network (WPAN).

Part 5 - 4G Wireless Network

➢ 3GPP-WLAN (Wireless Local Area Networks);

➢ Wireless Wide Area Networks (WWANs);

➢ Wireless Metropolitan Area Networks (WMANs);

➢ Non-roaming Wireless Local Area Networks (WLAN) interworking Reference Mode;

➢ A cooperative 4G Wireless Architecture;

➢ 4G Framework and Integration of all Mobile Technologies:

- Global System for Mobile Communications(GSM);

- General Packet Radio Service (GPRS);

- International Mobile Communications (IMT-2000);

- Wireless Fidelity (Wi-Fi);

- Bluetooth.

Part 6 - 3GPP Mobile Communications:Long Term Evolution (LTE) or System Architecture Evolution (SAE)

➢ Long Term Evolution (LTE) or System Architecture Evolution (SAE) Architecture;

➢ Evolved Universal Terrestrial Radio Access Network (E-UTRAN);

➢ Protocol Stacks;

➢ Long Term Evolution (LTE) Radio Network;

➢ Long Term Evolution (LTE) Spectrum;

➢ Single Carrier – Frequency Division Multiplexing (SC-FDM) and Single Carrier – Frequency Division Multiple Access (SC-FDMA);

➢ Frame Structure and Physical Channels;

➢ Physical Layer Procedures;

➢ Long Term Evolution (LTE) Radio Resource Management;

➢ Uplink RRM;

➢ Downlink RRM;

➢ Intra-LTE Handover;

➢ Long Term Evolution(LTE) Release 8/9 Features;

➢ Long Term Evolution (LTE) Advanced Features;

➢ Long Term Evolution(LTE) Transport and Core Network;

➢ Transport Network;

➢ Core Network.

Security and Protection of Mobile Communications

Part 7 - Security from GPRS Towards 3G Mobile Telephone Network Data Services (1)

➢ General Packet Radio System – GPRS Overview;

➢ Global System for Mobile Communications(GSM) and General Packet Radio Service (GPRS) Security;

➢ Protected Information on a Global System for Mobile Communications(GSM)/General Packet Radio Service (GPRS) Network:

- User Data;

- Charging Information;

- Subscriber Information;

- Technical Information of the GSM/GPRS/Network.

➢ Standard Global System for Mobile Communications(GSM) and General Packet Radio Service (GPRS) Security Services:

- Anonymity;

- Authentication;

- Signalling Protection/User Data Protection.

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Part 8 - Security from GPRS Towards 3G Mobile Telephone Network Data Services (2)

➢ Network Interface Security:

- User Interface;

- Airlink Interface;

- Internal Interfaces (BTS and SGSN; SGSN and HLR; SGSN and GGSN);

- Intercarrier Interface;

- External Interfaces.

➢ External GPRS Network:

- Managed Internet Connection;

- Standard Internet Connection;

- Frame Relay Connection.

➢ Security Threats:

- Attacks on the Mobile Device;

- Attacks on the Radio Path;

- Attacks on the Cellular Network;

- Attacks on the General Packet Radio Service (GPRS), Public and Corporate Network.

Part 9 - Security and Service Provision Models for 4G Wireless Networks

➢ Typical cooperative 4G applications:

- Mobile payment;

- Mobile target tracking;

- Vehicular networks.

➢ Attacks against wireless networks:

- Security requirements and challenges;

- Security requirements;

- Security challenges.

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- ➢ Service Provision in 4G wireless networks:

  - • 4G service architectures;

  - • Peer-to-Peer computing;

  - • Grid computing;

  - • Cloud computing.

- ➢ Mobile Grid: concept, challenges, and ongoing research:

  - • Mobile Grid concept;

  - • Mobile Grid challenges;

  - • Ongoing research of mobile Grid.

Part 10 - Advanced Authentication Model for 4G wireless networks

- ➢ Security management in 4G wireless networks;

- ➢ Requirements for e-government Public Key Infrastructure (PKI);

- ➢ Management of multi-trust in e-government:

  - • Multi-trust certificate structure;

  - • Hierarchical Lightweight Directory Access Protocol(LDAP);

  - • Trust Level Verification.

- ➢ Public Key Infrastructure (PKI) Organization:

  - • Public Key Infrastructure (PKI) Registration;

  - • Public Key Infrastructure (PKI) Generation;

  - • Public Key Infrastructure (PKI) Revocation;

  - • Public Key Infrastructure (PKI) Verification;

  - • Public Key Infrastructure (PKI) Publication.

- ➢ Strategy of analysis:

  - • Multi-level Trust based Authentication Model;

  - • Multi-level Trust Establishment;

  - • Extended Trust-based Authentication Model;

  - • Advanced Identity Management Model;

  - • Securing 4G subscribers identities;

  - • 4G Identity management model;

- Inter-system Authentication Model;
- Model Validation.

Part 11 - Long Term Evolution (LTE) Security Architecture

- ➤ Long Term Evolution (LTE) Network;
- ➤ Long Term Evolution (LTE) Communications Planes;
- ➤ Long Term Evolution (LTE) Protocols:
  - Radio Resource Control (RRC);
  - Packet Data Convergence Protocol (PDCP);
  - Radio Link Control (RLC);
  - Medium Access Control (MAC).
- ➤ Subscriber Identity (IMSI);
- ➤ Universal Integrated Circuit Card(UICC) Token;
- ➤ Device & Network Authentication;
- ➤ AKA Packet Capture:
  - Sending Temporary Identity;
  - Authentication Vectors;
  - Authentication Response.
- ➤ Cryptographic Key Usage;
- ➤ Air Interface Protection;
- ➤ Backhaul Protection.

Part 12 - Threats to Long Term Evolution (LTE) Networks

- ➤ General Computer Security Threats;
- ➤ Renegotiation Attacks Threat and Mitigation;
- ➤ Device & Identity Tracking Threat and Mitigation;
- ➤ Call Interception Threat and Mitigation;
- ➤ Jamming UE Radio Interface Threat and Mitigation;
- ➤ Attacks Against the Secret Key (K) Threat and Mitigation;

➢ Physical Base Station Attacks Threat and Mitigation;

➢ Availability Attacks on eNodeB& Core Threat and Mitigation.

Postgraduate Diploma, Postgraduate Certificate, and Diploma – Postgraduate - Short Course Regulation

Postgraduate Certificate, Postgraduate Diploma, and Diploma – Postgraduate: Their Distinction, Credit Value and Award Title

Postgraduate Short Courses of a minimum of five days' 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 to Awards bearing their title prefixes. While we, refer to our short studies, of 5 days to five weeks, as 'Courses', those with duration of 6 weeks and more are labelled 'Programmes'. Nevertheless, in line with popular usage, we often refer to all study durations as 'Courses'. Another mark of distinction, in this regard, is that participants in a short course are referred to as 'Delegates', as opposed to the term 'Students', which is confined to those studying a Postgraduate Programme.

Courses are of varying Credit-Values; some being Single-Credit, Double-Credit, Triple-Credit, Quad-Credit, 5-Credit, etc. These short courses accumulate to Postgraduate Certificate, with a total of 180 Credit-Hours (= 6 X 5-Day Courses or 3 X 10-Day Courses), or Postgraduate Diploma, with a total of 360 Credit-Hours (= 12 X 5-Day Courses or 6 X 10-Day Courses).

Delegates studying courses of 5-7 days' duration, equivalent to 30-42 Credit-Hours (Direct Lecturer Contact), will, on successful assessment, receive the Diploma – Postgraduate Award. This represents a single credit at Postgraduate Level. While 6-day and 7-day courses also lead to a Diploma – Postgraduate, they accumulate 36 and 42 Credit Hours, respectively.

Postgraduate Certificate, Postgraduate Diploma, and Diploma – Postgraduate Assessment Requirement

Because of the intensive nature of our courses and programmes, assessment will largely be in-course, adopting differing formats. These assessment formats include, but not limited to, in-class tests, assignments, end of course examinations. Based on these assessments, successful candidates will receive the Diploma – Postgraduate, Postgraduate Certificate, or Postgraduate Diploma, as appropriate.

In the case of Diploma – Postgraduate, a minimum of 70% overall pass is expected. In order 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.

Diploma – Postgraduate, Postgraduate Certificate, and Postgraduate Diploma
Application Requirements

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 form;
- ➢ A copy of Issue and Photo (bio data) page of the applicant's current valid passport or copy of his or her Photo-embedded National Identity Card;
- ➢ Copies of credentials mentioned in the application form.

Admission and Enrolment Procedure

➢ On receipt of all the above documents we 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 Admission Letters and Invoices;

➢ One week after the receipt of an applicant's payment or official payment notification, the relevant Course or Programme Tutor will contact him or her, by e-mail or telephone, welcoming him or her to HRODC Postgraduate Training Institute;

➢ Those intending to study in a foreign country, and require a Visa, will be sent the necessary immigration documentation, to support their application;

➢ Applicants will be notified of the dates, location and venue of enrolment and orientation, where appropriate.

Modes of Study and Duration of Postgraduate Certificate and Postgraduate Diploma Programmes

There are two delivery formats for Postgraduate Certificate and Postgraduate Diploma Programmes, as follows:

1. Intensive Full-time (Classroom-Based) Mode, lasting 3 months for Postgraduate Diploma, and 6 weeks for Postgraduate Certificate. These durations are based on six hours' lecturer-contact per day, five days (30 hours) per week, for Postgraduate Diploma;

2. Video-Enhanced On-Line Mode. This interactive online mode lasts twenty (20) weeks, for Postgraduate Diploma, and ten (10) weeks for Postgraduate Certificate. Our calculation is based on three hours per day, six days per week.

Whichever study mode is selected, the aggregate of 360 Credit Hours must be achieved.

Introducing Our Video-Enhanced Online Study Mode

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 tutor, ask and address questions; sit examinations in the presence of the tutor. 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 6-year period, towards a Postgraduate Certificate or Postgraduate Diploma.

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

➢ The tutor meets the group and presents the course, via Video, in a similar way to its classroom-based counterpart;

➢ All participants are able to 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 1st of each month, with the cut-off date being the 20th of each month, for inclusion the following month;

➢ Its duration is twice as long as 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;

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➢ 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.

10-Week Video-Enhanced Online Postgraduate Certificate and 20-Week Video-Enhanced Online Postgraduate Diploma

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.

Cumulative Postgraduate Certificate and Postgraduate Diploma Courses

All short courses can accumulate to the required number of Credit-Hours, for the Postgraduate Certificate and Postgraduate Diploma, over a six-year period from first registration and applies to both general and specialist groupings. In this regard, it is important to note that short courses vary in length, the minimum being 5 days (Diploma – Postgraduate) – equivalent to 30 Credit Hours, representing one credit, as is tabulated below.

On this basis, the definitive calculation on the Award requirement is based on the number of hours studied (aggregate credit-value), rather than merely the number of credits achieved. This approach is particularly useful when a student or delegate studies a mixture of courses of different credit-values.

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For those delegates choosing the accumulative route, it is advisable that at least one or two credits be attempted each year. This will ensure that the required 180 Credit-Hours and 360 Credit-Hours, for the Postgraduate Certificate and Postgraduate Diploma, respectively, are achieved, within the designated period. These Credit-Values, awards and their accumulation are exemplified below.

Examples of Postgraduate Course Credits: Their Value, Award Prefix & Suffix – Based on 5-Day Multiples		
Credit Value	Credit Hours	Award Title Prefix (& Suffix)
Single-Credit	30-54	Diploma - Postgraduate
Double-Credit	60-84	Diploma – Postgraduate (Double-Credit)
Triple-Credit	90-114	Diploma – Postgraduate (Triple-Credit)
Quad-Credit	120-144	Diploma – Postgraduate (Quad-Credit)
5-Credit	150-174	Diploma – Postgraduate (5-Credit)
6-Credit	180-204	Postgraduate Certificate
7-Credit	210-234	Postgraduate Certificate (+ 1 Credit)
8-Credit	240-264	Postgraduate Certificate (+2 Credits)
9-Credit	270-294	Postgraduate Certificate (+3 Credits)
10-Credit	300-324	Postgraduate Certificate (+ 4 Credits)
11-Credit	330-354	Postgraduate Certificate (+5 Credits)
12-Credit	360	Postgraduate Diploma
360 Credit-Hours = Postgraduate Diploma		
12 X 5-Day Courses = 360 Credit-Hours = Postgraduate Diploma		
10 X 6-Day Courses = 360 Credit-Hours = Postgraduate Diploma		

Exemplification of Accumulated Postgraduate Certificate and Postgraduate Diploma Award Titles

All Specialist Postgraduate Certificate and Postgraduate Diploma Programmes have their predetermined Award Titles. Where delegates do not follow a Specialism, for accumulation to a Postgraduate Diploma, they will normally be Awarded a General Award, without any Specialist Award Title. However, a Specialist Award will be given, where a delegate studies at least seventy percent (70%) of his or her courses in a specialist grouping. These are exemplified below:

1. **Postgraduate Diploma in Accounting and Finance;**
2. **Postgraduate Certificate in Accounting and Finance;**
3. **Postgraduate Certificate in Aviation Management;**
4. **Postgraduate Diploma in Aviation Management;**
5. **Postgraduate Certificate in Industrial Health and Safety Management, Incorporating Oil and Gas Safety;**
6. **Postgraduate Diploma in Industrial Health and Safety Management, Incorporating Oil and Gas Safety;**
7. **Postgraduate Certificate in Business Communication;**
8. **Postgraduate Diploma in Business Communication;**
9. **Postgraduate Certificate in Corporate Governance;**
10. **Postgraduate Diploma in Corporate Governance;**
11. **Postgraduate Certificate in Costing and Budgeting;**
12. **Postgraduate Diploma in Costing and Budgeting;**
13. **Postgraduate Certificate in Client or Customer Relations;**
14. **Postgraduate Diploma in Client or Customer Relations;**
15. **Postgraduate Certificate in Engineering and Technical Skills;**
16. **Postgraduate Diploma in Engineering and Technical Skills;**
17. **Postgraduate Certificate in Events Management;**
18. **Postgraduate Diploma in Events Management;**

19. Postgraduate Certificate in Health and Safety Management;

20. Postgraduate Diploma in Health and Safety Management;

21. Postgraduate Certificate in Health Care Management;

22. Postgraduate Diploma in Health Care Management;

23. Postgraduate Certificate in Human Resource Development;

24. Postgraduate Diploma in Human Resource Development;

25. Postgraduate Certificate in Human Resource Management;

26. Postgraduate Diploma in Human Resource Management;

27. Postgraduate Certificate in Information and Communications Technology (ICT);

28. Postgraduate Diploma in Information and Communications Technology (ICT);

29. Postgraduate Certificate in Leadership Skills;

30. Postgraduate Diploma in Leadership Skills;

31. Postgraduate Certificate in Law – International and National;

32. Postgraduate Diploma in Law – International and National;

33. Postgraduate Certificate in Logistics and Supply Chain Management;

34. Postgraduate Diploma in Logistics and Supply Chain Management;

35. Postgraduate Certificate in Management Skills;

36. Postgraduate Diploma in Management Skills;

37. Postgraduate Certificate in Maritime Studies;

38. Postgraduate Diploma in Maritime Studies;

39. Postgraduate Certificate in Oil and Gas Operation;

40. Postgraduate Diploma in Oil and Gas Operation;

41. Postgraduate Certificate in Oil and Gas Accounting;

42. Postgraduate Diploma in Oil and Gas Accounting;

43. Postgraduate Certificate in Politics and Economic Development;

44. Postgraduate Diploma in Politics and Economic Development;

45. Postgraduate Certificate in Procurement Management;

46. Postgraduate Diploma in Procurement Management;

47. Postgraduate **Certificate** in Project Management;

48. Postgraduate Diploma in Project Management;

49. Postgraduate **Certificate** in Public Administration;

50. Postgraduate Diploma in Public Administration;

51. Postgraduate **Certificate** in Quality Management;

52. Postgraduate Diploma in Quality Management;

53. Postgraduate **Certificate** in Real Estate Management;

54. Postgraduate Diploma in Real Estate Management;

55. Postgraduate **Certificate** n Research Methods;

56. Postgraduate Diploma in Research Methods;

57. Postgraduate **Certificate** in Risk Management;

58. Postgraduate Diploma in Risk Management;

59. Postgraduate **Certificate** in Sales and Marketing;

60. Postgraduate Diploma in Sales and Marketing;

61. Postgraduate **Certificate** in Travel, Tourism and International Relations;

62. Postgraduate Diploma in Travel, Tourism and International Relations.

The actual courses studied will be detailed in a student or delegate's Transcript.

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Prof. Dr. Ronald B. Crawford
Director
HRODC Postgraduate Training Institute