

HRODC Postgraduate Training Institute



A Postgraduate - Only Institution



#245.M7

Calibrating Temperature Measuring Instruments and Calibrators, in Legal Dynamic and Determinist Metrology

Postgraduate Short Course

Leading To:

DIPLOMA - POSTGRADUATE IN

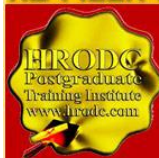
Calibrating Temperature Measuring Instruments and Calibrators, in Legal Dynamic and Determinist Metrology, Triple-Credit, 90 Credit-Hours

Accumulating to A

Postgraduate Certificate, With 90 Additional Credit-Hours, or A

Postgraduate Diploma, With 270 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.



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Websites:
<https://www.hrodc.com/>
<https://www.hrodc.london>
[postgraduateshortcourses.com/](https://www.postgraduateshortcourses.com/)

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HRODC Postgraduate Training Institute, A Postgraduate-Only Institution

Our UK Government's Verification and Registration

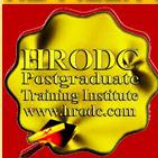
Our Institute is Verified by, and Registered with, the United Kingdom (UK) Register of Learning Providers (UKRLP), of the Department for Education (DfE). Its UK Provider Reference Number (UKPRN) is: 10019585 and might be located at: <https://www.ukrlp.co.uk/>.

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);

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- 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;

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➤ Personal Tutor

For Whom This Course is Designed

This Course is Designed For:

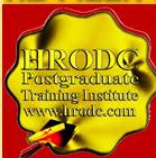
- Aviation Maintenance Engineers;
- Department of Trade Technical Team Members;
- Design Engineers;
- Dynamic Metrology.
- Engineering Managers;
- Instrumentation and Control Engineers;
- International Laboratory Standard Setters;
- Legal Metrologists;
- Legal Metrology Enforcement Officers;
- Machine Operators;
- Machinists;
- Manufacturing Engineers;
- Measurement Specialists;
- Mechanical Engineers;
- Metrologists, Generally;
- Metrology Technicians;
- National Air Force Technical Training Managers;
- National Metrology Laboratory Co-ordinators;
- National Physics Laboratory Employees;
- Officials of Department of Commerce;
- Physics Laboratory Metrologists;
- Precision Engineers;
- Process Engineers;
- Quality Control Inspectors;
- Quality Specialists;
- Trading Standards Enforcers;
- Quality Inspectors;

Calibrating Temperature Measuring Instruments and Calibrators, in Legal Dynamic and Determinist Metrology Course, Leading to Diploma Postgraduate - Calibrating Temperature Measuring Instruments and Calibrators (Triple Credit), and 90 Credit-Hours, Accumulating to A Postgraduate Certificate, with 90 Additional Credit-Hours, a Postgraduate Diploma, with -270 Additional Credit-Hours

- Weights and Measures Inspectors;
- Quality Engineers and Technicians;
- Quality Managers;
- Regional Metrology Laboratory Directors;
- Scientific Laboratory Assistants;
- Scientific Laboratory Directors;
- Technology Educators;
- Testers;
- Weights and Measures Specialists;
- All others desirous of enhancing their knowledge, skills and expertise in Calibrating Temperature Measuring Instruments and Calibrators.

Classroom-Based Duration and Cost:	
Classroom-Based Duration:	15 Days
Classroom-Based Cost:	£15,000.00 Per Delegate
Online (Video-Enhanced) Duration and Cost	
Online Duration:	30 Days – 3 Hours Per Day
Online Cost:	£10,050.00 Per Delegate

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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.

Calibrating Temperature Measuring Instruments and Calibrators, in Legal, Dynamic and Determinist Metrology Course Course

Leading to Diploma – Postgraduate – in Calibrating Temperature Measuring Instruments and Calibrators, in Legal, Dynamic and Determinist Metrology (Triple Credit) and 90 Credit-Hours, Accumulating to a Postgraduate Certificate, with 90 Additional Credit-Hours, or a Postgraduate Diploma, with 270 Additional Credit-Hours

Course Contents, Concepts and Issues

Part 1 – Temperature Measurement Principles

- Thermistors and their Function;
- The Principles of Thermistors as Temperature Sensors;
- Practical Applications of Thermistors;
- Temperature Measurement as an Issue for Metrologists;
- SI and Units;
- Primary Standards;
- Secondary Standards;
- Working Standards;
- The International Temperature Scale - 1990 (ITS-90);
- Thermometers and Thermocouples as Temperature Measuring Devices;
- Differences between Thermometers and Thermocouples;
- Temperature-Sensitive Resistance Vs Voltage Generation;
- How are Readings from Thermometers Made?

Part 2 – Thermometer Types and the International Temperature Scale of 1990 (ITS-90) (1)

Types of Thermometers

- Contact Thermometers
- Non-Contact Thermometers

Contact Thermometers

- Contact Liquid-in-glass Thermometers;
- Contact Electrical Thermometers:
 - Contact Electrical Resistance Thermometers;
 - Contact Electrical Thermocouples

Features of Contact Thermometers

- Advantages of Contact - Liquid-In-Glass Thermometer
 - Simplicity and Stability;
 - Portability;
 - Low Cost.
- Disadvantages of Contact - Liquid-In-Glass Thermometer
 - Limited accuracy and temperature range covered
 - Requires visual reading and is not easy to automate
- Main Features of Thermocouples:
 - Simple;
 - Rugged in Protective Metal Cables;
 - Small;
 - Inexpensive;
 - Wide Temperature Range.

Part 3 – Thermometer Types and the International Temperature Scale of 1990 (ITS-90) (2)

Non-Contact Thermometers

- Infra-Red Radiation Thermometers
- Use of Standard Platinum Resistance Thermometers Between Fixed Points, and Varied Range Points on ITS-90;
- Exploring Temperature Range, from the Triple Point of Hydrogen, at 13.8033 K, to the Freezing Point of Silver, at 961.78 °C;
- Exploring Standard Platinum Resistance Thermometers (SPRTs);

Part 4: Resistance Temperature Detectors (RTDs) Compared with Thermocouples and Thermistors.

- Thermocouples: Their Properties, Use and Limitations;
- Thermistor Types;
- Thermistor Output Circuits;
- Thermistors' Value
- Thermistors' Suitability for Use;
- Limitations of Thermistors' Use in Thermometry;
- Analysis of the Use of Copper as a Resistance Temperature Detector;
- Nickel-Iron as a Resistance Temperature Detector;
- Nickel as a Resistance Temperature Detector;
- DIN Nickel as a Resistance Temperature Detector;
- The Place of Platinum as a Resistance Temperature Detector.

Part 5 – Calibration of Temperature Measuring Instruments

- Exploring Temperature Calibration;
- Multifunction Calibrator;
- Output Drift;
- Burden Current;
- Compliance Voltage;

- Protection;
- Output Noise;
- Process Calibrator;
- What is a Reference Thermometer or Standard Thermometer?
- Deconstructing Temperature Calibration;
- What is involved in Temperature Calibration
- Temperature Sensors and their Calibration;
- Uncertainties Associated with Temperature Calibration;
- Using Temperature Reference Thermometers for Temperature Measuring Instrument Calibration;
- Using Temperature Reference Baths for Temperature Measuring Instrument Calibration.

Part 6 – High-Precision Temperature Measuring Instrument Calibration: Field, Laboratory and Fixed-Point Temperature Calibration (1)

Field Temperature Calibration

- Industrial or Portable Temperature Calibration;
- Thermometers Being Tested Outside of A Laboratory Environment,
- Aiming at Temperature Accuracies of 5 °C to 0.5 °C;
- Calibrating Using Dry-Wells;
- Calibrating with Metrology Wells;
- Using Micro-Baths;
- Using Ir Targets;
- Using Other Portable Heat Sources for Temperature Calibration;
- Using Portable Thermometer Readouts as Reference Temperatures;
- Using Thermometer Standards as Reference Temperatures;
- Comparing The Accuracy of Heat Sources with Portable Thermometer Readouts and Temperature Standards

Part 7 – High-Precision Temperature Measuring Instrument Calibration: Field, Laboratory and Fixed-Point Temperature Calibration (2)

Laboratory or Secondary Temperature Calibration:

- Calibration of Reference-Grade PRT or PT-100,
- Precision Thermistors,
- Noble-Metal Thermocouples.
- Ultra-stable Temperature Baths;
- Uniform Temperature
- Horizontal Furnaces (for the High Temperatures needed by Thermocouples);
- SPRT Reference Thermometers;
- high-accuracy thermometer readouts.
- Towards Temperature Calibration Accuracies of 0.5 °C to 0.02 °C.

Part 8 - High-Precision Temperature Measuring Instrument Calibration: Field, Laboratory and Fixed-Point Temperature Calibration (3)

Fixed-Point or Primary Temperature Calibration;

- Using Fixed-Point Cells for Temperature Calibration,
- Using Triple Point of Water,
- National Institute of Standards and Technology (NIST) temperature Range Selection;
- Using Noble-Metal Thermocouples to 0.001 °C Calibration Accuracy
- Industrial Temperature Calibration
- Automatic Temperature Calibration;
- Industrial Temperature Calibration: Traceable Calibration
- Temperature Calibration Software.

Part 9 – Temperature Calibration Uncertainty (1)

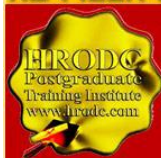
- Deconstructing Measurement Uncertainty;
- Distinguishing Measurement Error from Uncertainty of Measurement;
- Methods for Determining Measurement Uncertainty;
- Expressing Uncertainty of Measurements;
- The Monte Carlo Method That Is Used to Assess Uncertainty;
- The Effect of the Environment On Temperature Measurement Uncertainty,
- The Effect of Air Pressure On the Temperature Measurement Uncertainty;
- The Effect of Humidity On Temperature Measurement Uncertainty;
- The Uncertainty of Radiation Thermometers;
- Example of Temperature Uncertainty Calculation;
- Uncertainties Components Linked to Reference Standard;
- Uncertainties Linked to Instrument Under Calibration;
- Uncertainties Linked to Data Acquisition for Temperature Calibration;
- Uncertainties Components Linked to Temperature Bath;
- Combined Standard Uncertainty in Temperature Calibration;
- Using Dry Block to Calculate the Total Uncertainty of Temperature Calibration.

Part 10 – Temperature Calibration Uncertainty (2)

- Using an External Reference Sensor for the Calculation of the Uncertainty of Temperature Calibration;
- Deconstructing Metrology Wells;
- Uncertainty of Metrological Wells;
- Uncertainty of the Reference Thermometer Inputs of Metrological Wells;
- Axial Uniformity of Metrological Wells and its Implications for Temperature Calibration;
- Continuing Stability of Metrological Wells;
- Stem conduction Error in Metrological Wells;
- Uncertainty of Air Temperature Measurements;

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- New Generation Temperature Sensors for Reduced Temperature Uncertainty Levels;
- Equipment Developments: Improving Temperature Measurement Accuracies;
- Improving Short-term Stability During Calibrations;
- Improving Chamber Uniformity During Calibrations;
- Using of A Sub-Chamber to Reduce Fluctuations Associated with Climatic Chamber Control Cycles.

Part 11 – Platinum and Platinum Resistant Thermometers (PRTs) 1

Platinum (Pt)



- Platinum and its Physical Characteristics:
 - Color;
 - Luster;
 - Transparency;
 - Cleavage;
 - Fracture;
 - Hardness;
 - Specific Gravity;
 - Streak;
 - Tenacity.
- The Chemical Properties of Platinum:
 - Atomic number;
 - Atomic mass;
 - Electronegativity according to Pauling;

- Density;
 - Melting point;
 - Boiling point;
 - Vander Waals Radius;
 - Ionic Radius;
 - Isotopes;
 - Electronic Shell;
 - Energy of first Ionization;
 - Energy of Second Ionization.
- Platinum and its General Uses:
- In Electronics and Scientific Apparatus.
 - As Jewelry.
 - In Dentistry.
 - As Catalyst in Petroleum Refining.
 - In Car Exhaust Anti-Pollution Devices.
 - In Platinum Resistance Thermometers.
- Platinum Properties Lending to its use in Thermometers.

Part 12 – Platinum and Platinum Resistant Thermometers (PRTs) 2

- Platinum Resistant Thermometers (PRTs);
- Temper Measurement Range of Platinum Resistant Thermometers (PRTs)
- Using Standard Platinum Resistance Thermometer (SPRT) Calibrations
 - Resistance Values of Platinum Resistant Thermometers (PRTs) and their Temperature Measuring Capabilities:
 - Thermometers with Pt100 Temperature Probes;
 - Thermometers with Pt500 Temperature Probes;
 - Thermometers with Pt1000 Temperature Probes.
- Wire Core of Platinum Resistance Thermometers and its Significance for Error Creation or Elimination;

- The Dual Core (2-wire) Platinum Resistance Thermometers (PRTs);
- The Triple Core (3-wire) Platinum Resistance Thermometers (PRTs);
- The Quad Core (4-wire) Platinum Resistance Thermometers (PRTs);
- BS EN 60751 Colour Coding for the Wiring PRTs.

Part 13 – Types of Standard Platinum Resistance Thermometers (SPRTs): Their Configuration and Use:

- The Helium-Filled Capsule-Type (cSPRT) Thermometers;
- The Long-Stem SPRT;
- Special High-Temperature SPRTs.
- Industrial Platinum Resistance Thermometer Sensors;
- The Place of Negative Temperature Coefficient (NTC) Thermistors in Resistance Thermometers.

Part 14 – Pyrometers and Their Role in Temperature Measurements

- Guiding Principles of Pyrometry;
- Advantages of Pyrometers in Temperature Measurements;
- Types of Pyrometers:
 - Optical pyrometers;
 - Infrared / Radiation Pyrometers.

Part 15 – Radiation Thermometry (Infrared Thermometry/ Radiation Pyrometry): Its Use, Problems and Solutions

- Advantages of Infrared (IR) Thermometers;
- Determining Emissivity in IR Temperature Measurements;
- Measuring Metals with IR Thermometers;
- Measuring Plastics with IR Thermometers;
- Measuring Glass with IR Thermometers;
- Measuring Ambient Conditions with IR Thermometers

- Measuring Optics with IR Thermometers;
- Measuring Windows with IR Thermometers
- Detectors
- Displays and Interfaces of IR Thermometers;
- Disadvantages of Radiation Pyrometers:
 - Simultaneous dependence on Surface Temperature and its Emissivity;
 - Emissivity Dependent on The Material Type and Its Surface Condition;
 - Error Caused by Radiation Emission by heated Objects and Lighting on Object Surface;
 - Imperfections in The Optics Used to Focus the Radiation On the Detector Might Obscure the Field of View, resulting in Calibration Error.

Use of Special Pyrometers

- The Principles and Use of Fiber-optic Pyrometer Thermometers;
- Understanding and Using Ratio Pyrometer Thermometers.
- Errors Inherent in Resistance Thermometers.

Part 16 – Non-Contact Thermal Imaging and Thermography: Analysis Of Its Thermal Imaging Application

- Use in Surveillance;
- Night Vision Aid;
- Search and Rescue
- Building and Land Surveying
- Aircraft and Missile Tracking
- Ideal for Detecting Hot Spots Due to Failure in Electrical Equipment;
- Immensely Important in Electronic Circuits;
- Use in Non-Contact Medical Infrared Thermography.

Part 17 – Positive and Negative Features of 2-Dimensional Radiation Thermometers

- Fixed Installations,
- Portable Devices;
- Hand-Held devices;
- Attributes for Long Focal Distance;
- Focal Orientation Towards Close Objects;
- Improved Affordability;
- Thermal Measurement Accuracy;
- Highly Accurate Temperature Measurement;
- Prone to The Emissivity Error;
- Subject to Reflected Radiation Error;
- Source-Size Error.

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;
- 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.

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)



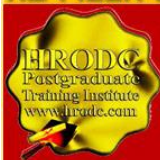
Examples of Postgraduate Course Credits: Their Value, Award Prefix & Suffix – Based on 5-Day Multiples		
Credit Value	Credit Hours	Award Title Prefix (& Suffix)
6-Credit	180-204	Postgraduate Certificate
7-Credit	210-234	Postgraduate Certificate (+ 1 Credit)
8-Credit	240-264	Postgraduate Certificate (+2 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;**

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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 in 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