SHAPING
CHANGE
Contents

5  Q1 Training Calendar

6–19  Foundation Training in Co-ordinate Measurement

20–21  Advanced Training in Co-ordinate Measurement

22–23  Other courses

24  About Hexagon Metrology

25  Maps

26  Hotels
Hexagon Metrology believes UK manufacturing and its engineers have something unique to offer the world. Our behaviours and Inherent British character drives invention and innovation creating cutting edge products and services.

The requirement and need for good quality skills and knowledge in the measurement sector has never been so strong. In a survey on geometrical tolerancing, 80% of questions were answered incorrectly. By talking to major worldwide manufacturers, educational institutions and training specialists, we have built a comprehensive picture of training needs and have created a training program that fills the dimensional measurement skills gap.

We believe that to stay at the front of the world pack we have to invest in our engineers ensuring they are highly skilled and above all maintain their optimum skill level.

Mistakes in quality, design and production can have a contagion effect. With Tier 1 manufacturers enforcing best practice metrology training as part of their quality procedures for themselves and their suppliers doing nothing is no longer an option.

Hexagon Metrology challenges you to...

- Learn something new.
- Take charge of your personal development.
- Question, analyze and optimize.
- Drive your new skills when you get back to work.
- Value your new qualification, you earned it.
### Q1 Training Calendar 2015

#### Foundation Training in Co-ordinate Measurement

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Location</th>
<th>Days</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Practical Guide to GD&amp;T</td>
<td>Various</td>
<td>1</td>
<td>£995*</td>
</tr>
<tr>
<td><strong>New</strong> An Introduction to Co-ordinate Measurement</td>
<td>Various</td>
<td>1</td>
<td>£995*</td>
</tr>
<tr>
<td><strong>New</strong> A Practical Guide to Measurement Uncertainty</td>
<td>Various</td>
<td>1</td>
<td>£995*</td>
</tr>
<tr>
<td><strong>New</strong> An Introduction to Dimensional Metrology</td>
<td>Various</td>
<td>1</td>
<td>£995*</td>
</tr>
<tr>
<td>PC-DMIS CAD DCC Level 1</td>
<td>Telford</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>PC-DMIS CAD DCC Level 1</td>
<td>Milton Keynes</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>QUINDOS Basic Training</td>
<td>Telford</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

#### NPL Qualifications

<table>
<thead>
<tr>
<th>NPL Qualifications</th>
<th>Location</th>
<th>Days</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPL Level 1 Qualification in Dimensional Measurement</td>
<td>Telford</td>
<td>3</td>
<td>6, 13, 26</td>
</tr>
<tr>
<td>NPL Level 2 Qualification in Dimensional Measurement</td>
<td>Telford</td>
<td>4</td>
<td>19</td>
</tr>
<tr>
<td><strong>New</strong> NPL Introduction to Metrology</td>
<td>eCourse</td>
<td>30</td>
<td>Online</td>
</tr>
<tr>
<td><strong>New</strong> NPL Introduction to Measurement Uncertainty</td>
<td>eCourse</td>
<td>30</td>
<td>Online</td>
</tr>
<tr>
<td><strong>New</strong> NPL Understanding Geometrical Tolerance</td>
<td>eCourse</td>
<td>30</td>
<td>Online</td>
</tr>
<tr>
<td><strong>New</strong> NPL Tolerance Types</td>
<td>eCourse</td>
<td>30</td>
<td>Online</td>
</tr>
<tr>
<td><strong>New</strong> NPL Measurement Strategy and Principles of Measurement</td>
<td>eCourse</td>
<td>30</td>
<td>Online</td>
</tr>
<tr>
<td><strong>New</strong> NPL Measuring Instruments</td>
<td>eCourse</td>
<td>30</td>
<td>Online</td>
</tr>
<tr>
<td><strong>New</strong> NPL Adapting a Measurement Strategy</td>
<td>eCourse</td>
<td>30</td>
<td>Online</td>
</tr>
</tbody>
</table>

#### Advanced Training in Co-ordinate Measurement

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Location</th>
<th>Days</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>PC-DMIS CAD ++ Level 2</td>
<td>Telford</td>
<td>3</td>
<td>23</td>
</tr>
<tr>
<td>PC-DMIS CAD ++ Level 2</td>
<td>Milton Keynes</td>
<td>3</td>
<td>26</td>
</tr>
</tbody>
</table>

### Terms & Conditions:
* Symbol indicates a price PER COURSE (ask for details on numbers and scheduling). All other prices are PER PERSON. All prices represent the cost of joining an open course at either our Telford or Milton Keynes Technical Centres. Training at our Technical Centres is delivered using one of the latest 2 versions of PC-DMIS. Confirmation and payment must be received with the order. Alternatively, you can request a proforma invoice. A training reservation cannot be made before a payment is received. All prices are quoted exclusive of VAT. Hexagon Metrology Limited reserves the right, at its discretion, to cancel, postpone or move location of courses at any time with a minimum of 10 days notice. If a course is cancelled and an alternative date is not suitable, fees will be refunded in full. A course may be re-scheduled by either party without cancelling. Hexagon Metrology Limited reserves the right to cancel or change any course in the event of insufficient numbers of delegates to make a course viable. All travel/hotel cost will be the responsibility of the customer.

www.hexagonmetrology.co.uk/training
There are some fantastic courses that form Hexagon Metrology’s Foundation Programme. You can be confident that the course you choose has been designed and packaged by our leading metrology experts. The course will also be delivered by a fully qualified, time served trainer.

Becoming PC-DMIS Certified or NPL Qualified is a tremendous achievement in itself but there’s a reason people will still ask you “Where did you train?”.

Hexagon Metrology's Foundation Programme will see you become one of the most skilled, qualified and valuable individuals in the UK metrology industry and you will be certified through the Academy of the world’s largest metrology manufacturer. We have designed the Foundation Programme to cover a wide range of metrology aspects without cutting corners.

• Over 700 people Certified in NPL Dimensional Measurement.
• Over 30 years trainer experience.
• Big investment shows we’re serious about metrology education in the UK. New state of the art metrology training facility opened in Telford and a New Precision Centre in Milton Keynes in 2013.
Aims & Objectives

To provide:

• A foundation of knowledge for anyone whose role involves the use of Geometrical Dimensioning and Tolerancing (GD&T).
• The knowledge and training for people who are required to use GD&T during their daily task.
• The tools to instil and encourage questioning culture.

Enabling:

• An understanding of some of the relevant standards relating to Geometrical Product Specification. Principles and tolerances associated with the measurement process and why the understanding of GD&T is so important in Metrology.

This one day course is applicable to all industrial sectors from Design, Manufacturing and Quality Control. It can be used to refresh knowledge, give a basic understanding or used as a building block for further courses.
Foundation Training in Co-ordinate Measurement
An Introduction to Co-ordinate Measurement

Aims & Objectives

To provide:
• A foundation of knowledge for anyone who is required to use a coordinate measuring machine or to refresh the knowledge of those already involved performing basic measurements.
• Best practice techniques.
• The knowledge and training for people whose role involves the use of Coordinate Measuring Machines in their daily task.
• The tools to instil and encourage the questioning culture.

Enabling:
• An understanding of coordinate principles
• An understanding of Datum's and why they are important
• An understanding of the set-up requirements and best practice
• Practical knowledge of basic coordinate measurement
Aims & Objectives

To provide:
• A foundation of knowledge for anyone who is required to understand the principles for evaluating measuring uncertainty.
• The knowledge and training for people whose role involves the use of all types of dimensional metrology equipment.
• The tools to instil and encourage the questioning culture.

Enabling:
• An understanding of measuring uncertainty principles.
• An understanding of how to recognise and evaluate uncertainty contributions.
• An understanding of the basis for calculating an uncertainty budget.
• Practical knowledge of measurement uncertainty evaluation.
• An understanding of the basic requirements of ISO 14253.
Foundation Training in Co-ordinate Measurement
An Introduction to Dimensional Metrology

Aims & Objectives

To provide:
- A foundation of knowledge for anyone who is new to metrology or to refresh the knowledge of those already involved in performing basic measurements
- The knowledge and training for people whose role involves the use of basic measuring instruments in their daily task.
- The tools to instil and encourage the questioning culture

Enabling:
- An understanding of the term tolerance as well as other basic terms used in metrology
- An appreciation of how basic measurement is performed through practical use of ‘first principle’ measuring instruments
Aims & Objectives

To provide:
- The level of competence and understanding required of the software & hardware by anybody involved in the measuring process.
- The knowledge and training for people who are required to use dimensional measurement techniques to complete their daily tasks.
- The tools to instil and encourage questioning culture.
- Some theory based learning along with hands-on practice of using the relevant hardware.

Enabling:
- A good understanding of the metrology process and how your PC-DMIS software is used to maximise efficiency.

Intended audience
- Anyone using measurement equipment in the workplace
- Manufacturing & engineering personnel
- Design staff
- Production supervisors & managers
- Quality control personnel
- Measurement technicians
- Process planners
- Apprentices
Foundation Training in Co-ordinate Measurement
QUINDOS Basic Training

Aims & Objectives

To provide:

- The skills needed for attendees to utilize the basic functions and capabilities of QUINDOS 7 software.
- Some theory based learning along with hands-on practice of using the relevant hardware

Enabling:

- A good understanding of the metrology process and how your QUINDOS software is used to maximise efficiency.

Intended audience

- Anyone using measurement equipment in the workplace
- Manufacturing & engineering personnel
- Design staff
- Production supervisors & managers
- Quality control personnel
- Measurement technicians
- Process planners
- Apprentices
The National Physical Laboratory (NPL) is the UK’s national measurement institute and is a world-leading centre of excellence in developing and applying the most accurate measurement standards, science and technology available. For more than a century NPL has developed and maintained the nation’s primary measurement standards. These standards underpin an infrastructure of traceability throughout the UK and the world that ensures accuracy and consistency of measurement.”

www.npl.co.uk
NPL Dimensional Measurement Level 1 Qualification

**Aims & Objectives**

**To provide:**
- To provide underpinning knowledge and expertise in using measurement tools and an appreciation of the importance of measurement.
- The deliver practical training for people who are required to use dimensional measurement techniques to complete their daily tasks.
- To instil and encourage a questioning culture.

**Benefits to the learner:**
- To understand the importance of using the correct measurement tools for varying applications.
- Give delegates a sense of responsibility for the measurement process and its practical application.
- Hands-on experience of why measurement is critical to the entire manufacturing engineering process.
- To encourage learners to develop a measurement strategy in the workplace.

Level 1 is applicable to all industrial sectors as a stand-alone qualification or as a building block for further NPL Dimensional Measurement training levels – 2 & 3.

“NPL training has given me more confidence to make informed decisions and empowered me to take on more responsibility. Thanks to this course, I’m 50 percent more productive than I was.” - Medical Supplier
Aims & Objectives

To provide:
- To provide knowledge and expertise in the application of measurement.
- To enable organisations to save time and money through the implementation of best measurement practice.
- To encourage a planning culture.

Benefits to the learner:
- Application of the fundamental principles of geometrical product specification and measurement tools.
- To understand the fundamental principles of calibration.
- To apply fundamental measurement calculations.
- Respond to measurement results and related uncertainty.
- Communicate, question and plan the measurement process.

Level 2 is applicable to all industrial sectors as a stand-alone qualification or as a building block for further NPL Dimensional Measurement training levels – 3 & 4.
“If everyone is moving forward together, then success takes care of itself.”
– Henry Ford

DON’T GET LEFT BEHIND
MOVE FORWARD

PC-DMIS 2014 is here.
The most advanced and user-friendly version yet, it continues to lead the way in dimensional metrology software.

Don’t miss out on the new features and functionality that others are benefiting from right now.

Move forward with Hexagon Metrology and let their success take care of itself. The team at Hexagon Metrology UK are so proud of the new version of PC-DMIS that we want everyone to see it! This is why we have frozen SMA back charges for the next 3 months. Order PC-DMIS 2014 today to take advantage of this special offer.

www.hexagonmetrology.co.uk
Aims & Objectives

This course has been designed to introduce metrology, the science of measurement, and explore its value for industry, the economy, science and society. It introduces practical guidelines that will help trainees to improve measurement procedures within their day-to-day work, and support successful everyday measurements.

You will receive an NPL Certificate on completion.

Course modules:

- The Role of Metrology and its Worldwide Relevance - defines what metrology is and explores its tangible value to macroeconomics, quality of life and science.
- The International System of Units - explores each of the seven SI base units and the methods currently used to realise them.
- The Relevance of the World Wide Measurement Uniformity - defines the international metrological infrastructure, organisation and explores the concepts of “traceability” and “calibration”.
- Measurement in Practice - describes the processes essential for good measurement practice and defines measurement uncertainty.

Course format:

- 2 hours of self-paced full HD video lessons
- Over 30 self-assessment questions
- Formal assessments with over 55 questions
- 1 hour and 30 minutes of additional selected videos
- Selection of links to improve your measurement awareness and skills
- Printable lesson slides
NPL Introduction to Uncertainty (e-Learning Course)

Aims & Objectives

The Introduction to Measurement Uncertainty is a certified e-Learning course that explores measurement uncertainty. You will learn how risks are estimated enabling good decision-making in practical contexts, such as in manufacturing and regulation - maximise your efficiency and productivity. The course consists of a series of multimedia presentations, exercises and an extensive selection of additional content, delivered through a self-paced learning experience. Track your progress and assess your knowledge - receive immediate feedback on how much you have learnt.

You will receive an NPL certificate on completion.

- Identify sources of measurement uncertainty
- Implement good measurement practices
- Read and understand an uncertainty statement
- Understand the process of calculating an expanded uncertainty
- Distinguish concepts such as ‘standard deviation’, ‘standard uncertainty’ and ‘expanded uncertainty’
- Understand a coverage interval with a desired coverage probability
- Understand how risks are estimated to sustain good measurement-related decision-making
NPL Introduction to Uncertainty  
(e-Learning Course)

Audience:

- Workplace learning schemes
- Professionals and management in measurement or related roles
- Professionals working on the manufacturing shop floor
- Professionals working in inspection departments
- Apprenticeship programmes
- National curricula
- Universities and academic institutions
- Students and apprentices

Course format:

- Approximately 2 hours of self-paced HD video lessons
- Over 40 self-assessment questions
- Formal assessments with over 35 questions
- Selection of additional learning materials: video content and links
- Printable lesson slides
- On-demand NPL certificate
Hexagon Metrology's Advanced Training Programme will see you join an elite band of metrology professionals in the industry that are Hexagon Metrology trained to the highest level.

As you progress on from the Foundation level of Academia you move away from the “Operator” and “Basic Programmer” categories of Measurement and push into the expert areas of “Advanced Programmer” and “Leader” of Measurement.

- New courses.
- 15% discount for all SMA holders.
- Class room based training courses updated and materials re-written to keep up with the changing demands from Industry.
- Online content and courses in development.
- Post-course support available with follow up refresher days.
Aims & Objectives

To provide:
- The level of competence and understanding required of the software & hardware by anybody involved in the measuring process
- The principle knowledge and practical training for people who are required to use dimensional measurement techniques to complete their daily tasks

Enabling:
- An advanced understanding of the metrology process and how your PC-DMIS software is used to maximise efficiency.

Intended audience:
- Anyone using measurement equipment in the workplace
- Manufacturing & engineering personnel
- Design staff
- Production supervisors & managers
- Quality control personnel
- Measurement technicians
- Apprentices
- Those who have studied Level 1
Other Software Based Training Courses

In addition to Hexagon Metrology’s Foundation and Advanced Programmes, we have available, some specialised Courses to suit particular types of PC-DMIS Software.

PC-DMIS Vision reduces the time spent developing inspection programs by up to 75% and integrates CAD into the measurement process. It has a sophisticated set of tools crafted to ease the job of developing, debugging and executing measurement programs to meet the unique requirements of vision metrology.

• PC-DMIS Vision links fully online, 3D CAD to specific vision metrology systems.
• Offline programming
• Camera simulation to accurately simulate selected measurement options including camera views, lighting and probe selection.
• Enhanced edge detection.
Other Software Based Training Courses
PC-DMIS CAD DCC Level 1 Refresher Course

Aims & Objectives

To provide:
- An opportunity to review PC-DMIS Level 1 modules.
- The principle knowledge and practical training for people who are required to use PC-DMIS during their daily tasks.

Enabling:
- The new user of PC-DMIS to apply their Level 1 skills with absolute confidence.

This one day course is a great opportunity to obtain some bespoke training in PC-DMIS Software. The refresher course will not be an open course and therefore, you can tailor the course to your own specific needs, choosing and covering the areas that you want to brush up on following the level 1 & 2 courses.

Intended audience:
- Those who have studied Level 1
- Level 1 Qualified candidates that need re-training or further training in a particular subject
Who is Hexagon Metrology and what do we do?

Hexagon Metrology offers a comprehensive range of products and services for all industrial metrology applications in sectors such as automotive, aerospace, energy and medical. We support our customers with actionable measurement information along the complete life cycle of a product from development and design to production, assembly and final inspection.

- 20 production facilities
- 70 Precision Centres for service and demonstrations
- Over 100 distribution partners on five continents
- CMMs, Scanners, Trackers, Arms, Tools, Software, Solutions, Metrology Consultancy

We empower our customers to fully control their manufacturing processes, enhancing the quality of products and increasing efficiency in manufacturing plants around the world. For more information, visit [www.hexagonmetrology.com](http://www.hexagonmetrology.com).

The UK arm of the multinational, which operates from purpose built premises in Telford markets, sells and maintains all Hexagon Metrology products and solutions as well as quality assured ‘any brand’ pre-owned CMMs.

The company also provides a wide range of aftermarket services including CMM and software installations, calibration and training.

Hexagon Metrology’s Telford based team of 80, one of the largest in the UK, is focused on the delivery of quality, value and total precision.
1. Exit the M54 at Junc 4, take exit to A464 towards Bridgnorth
2. Straight over the next Island.
3. At the roundabout, take the 1st exit onto the A442 ramp to Bridgnorth
4. Merge onto Queensway/A442
5. Take the exit toward Stichley/Halesfield
6. At the roundabout, take the 1st exit onto Halesfield 1
7. At the roundabout, take the 2nd exit onto Halesfield 8
8. At the roundabout, take the 3rd exit onto Halesfield
9. Destination will be on the left

Hexagon Metrology Ltd
Metrology House
Halesfield 13
Telford
Shropshire
TF7 4PL
Tel: 0870 446 2667
Fax: 0870 446 2668

1. At junction 14, take the A509 exit to Milton Keynes/Newport Pagnell
2. At the roundabout, take the 3rd exit onto A509
3. At the roundabout, take the 3rd exit onto H5/Portway/A509
4. At the roundabout, take the 3rd exit onto Tongwell St
5. At the roundabout, take the 2nd exit onto Michigan Dr
6. Turn left to stay on Michigan Dr. Destination will be on the left

Hexagon Metrology Ltd
Hexagon House
Michigan Drive
Tongwell
Milton Keynes
MK15 8HT
Tel: 0870 446 2667
Fax: 0870 446 2668
When training at one of our facilities, we have a list of local Hotels / B&B's that are recommended for you. We have preferential rates with most of these companies so please mention Hexagon when you book.

### Telford

<table>
<thead>
<tr>
<th>Hotel Name</th>
<th>Address</th>
<th>Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>The International Hotel</td>
<td>St Quentin Gate, Telford</td>
<td>01952 - 521600</td>
</tr>
<tr>
<td>Q-Telford Hotel &amp; Golf Resort</td>
<td>Great Hay Drive, Sutton Heights, Telford</td>
<td>01952 429977</td>
</tr>
<tr>
<td>Mercure Telford Hotel</td>
<td>Castle Fields Way, Madeley, Telford</td>
<td>01952 680068</td>
</tr>
<tr>
<td>The Malthouse</td>
<td>The Wharfage, Iron bridge, TF8 7NH</td>
<td>01952-433547</td>
</tr>
<tr>
<td>The Raven</td>
<td>Much Wenlock, TF13 6EN</td>
<td>01952-727251</td>
</tr>
</tbody>
</table>

### Milton Keynes

<table>
<thead>
<tr>
<th>Hotel Name</th>
<th>Address</th>
<th>Telephone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Premier Inn</td>
<td>Brickhill Street, Milton Keynes, MK15 9HQ</td>
<td>0871 527 8778</td>
</tr>
<tr>
<td>Holiday Inn</td>
<td>Tongwell Street, Milton Keynes, MK15 0YA</td>
<td>0871 9021624</td>
</tr>
<tr>
<td>Jury’s Inn</td>
<td>Midsummer Blvd, Milton Keynes, MK9 2HP</td>
<td>01908 8437000</td>
</tr>
</tbody>
</table>
LEARN SOMETHING NEW...

Hexagon Metrology Limited
Metrology House
Halesfield 13
Telford
Shropshire
TF7 4PL
Tel: 0870 446 2667
Fax: 0870 446 2668
Email: enquiry.uk@hexagonmetrology.com
www.hexagonmetrology.com/training
Hexagon Metrology offers a comprehensive range of products and services for all industrial metrology applications in sectors such as automotive, aerospace, energy and medical. We support our customers with actionable measurement information along the complete life cycle of a product – from development and design to production, assembly and final inspection.

With more than 20 production facilities and 70 Precision Centres for service and demonstrations, and a network of over 100 distribution partners on five continents, we empower our customers to fully control their manufacturing processes, enhancing the quality of products and increasing efficiency in manufacturing plants around the world.

For more information, visit www.hexagonmetrology.com