

**COURSE OVERVIEW HE1940**  
**Industrial Hygiene Certification Program**  
**BOHS-M503: Noise – Measurement and Its Effects**  
*(Accredited by the British Occupational Hygiene Society - BOHS)*

**Course Title**

Industrial Hygiene Certification Program: BOHS-M503: Noise – Measurement and Its Effect  
*(Accredited by the British Occupational Hygiene Society - BOHS)*

**Course Date/Venue**

Please see page 3

**Course Reference**

HE1940

**Course Duration**

Five days/3.7 CEUs/37 PDHs



**Course Description**



***This practical and highly-interactive course includes various practical sessions and exercises. Theory learnt will be applied using our state-of-the-art simulators.***

This course aims to provide candidates with an appreciation of the nature of noise and vibration hazards in the workplace and the effects of noise, and vibration, on people.



It also details the approach in carrying out noise and vibration assessments in the workplace and in the general environment, and to determine the significance of measurement data in relation to the various standards for compliance.

On completing this course successfully, participants will be able to:-

- Describe the consequences to health and wellbeing of excessive exposure to noise
- Understand the measurement (including dosimetry) of noise in relation to current standards
- Conduct surveys in the workplace to assess risks from noise
- Advise on the need and means of control including PPE
- Appreciate and advise on environmental noise assessment and concerns
- Understand current standards and good practice in these fields



This course is designed to provide participants with a detailed and up-to-date overview of BOHS-M503: Noise – Measurement and Its Effects. It covers the physics of noise covering the properties of sound and definitions and measurements units-noise; the various limits to noise, and vibration, exposure, and the role of health surveillance, including audiometry, in reducing risk; the ear and its response to sound, audiometry and noise exposure limits; the major sources of industrial noise and vibration and community noise; and the assessment of the noise risk covering sound level meters, frequency analysis, personal noise dosimetry and sound power and sound intensity measurements.

During the interactive course, participants will learn the noise control and hearing protection by controlling the noise generated at source and noise generated by administrative means; the hearing protection and environmental noise assessment; the propagation of sound, instrumentation and noise measurement and assessment; the proper measurement and control of vibration and the relevant exposure limits; the relevant exposure standards for noise; the interpretation of environmental noise measurements; and the impacts of intermittent or tonal components in the noise.

This course will require at least 45 hours of study time, of which at least 37 hours will be taught (teaching and practical assessments) and 8 hours will be independent (in the candidates' own time).

## Course Objectives

Upon the successful completion of this course, each participant will be able to:

- Achieve the OHTA Certificate in BOHS-M503: Noise – Measurement and Its Effects
- Discuss the physics of noise covering the properties of sound and definitions and measurements units-noise
- Recognize the various limits to noise, and vibration, exposure, and the role of health surveillance, including audiometry, in reducing risk
- Describe the ear and its response to sound, audiometry and noise exposure limits
- Identify the major sources of industrial noise and vibration and community noise
- Assess noise risk covering sound level meters, frequency analysis, personal noise dosimetry and sound power and sound intensity measurements
- Carry out noise control and hearing protection by controlling the noise generated at source and noise generated by administrative means
- Apply hearing protection and environmental noise assessment as well as propagation of sound, instrumentation and noise measurement and assessment
- Apply proper measurement and control of vibration and the relevant exposure limits
- Discuss the relevant exposure standards for noise and interpret environmental noise measurements, including the impacts of intermittent or tonal components in the noise

## Exclusive Smart Training Kit - H-STK®



*Participants of this course will receive the exclusive “Haward Smart Training Kit” (H-STK®). The H-STK® consists of a comprehensive set of technical content which includes **electronic version** of the course materials conveniently saved in a **Tablet PC**.*

### Who Should Attend

This course provides an overview of all significant aspects and considerations of noise – measurement and its effects for technicians and technologists who carry out measurements and testing in workplaces. Candidates are also expected to be aware of the general contents of the control of noise at work regulations 2005 and guidance on the control of noise at work regulations.

### Exam Eligibility & Structure

There are no prerequisites required for this qualification.

### Suggested References and Further Reading

- (1) Monitoring for health hazards at work
- (2) Principles of Occupational Health and Hygiene
- (3) Protection of Workers Against Noise and Vibration in the Working Environment. ILO code of practice
- (4) The Occupational Environment – Its Evaluation and Control (the “White Book”)
- (5) Noise Control in Industry: A Basic Guide
- (6) HSE Guidance Note MS26, A Guide to Audiometric Testing Programmes
- (7) BS EN 61672-1:2003 Electroacoustics. Sound Level Meters. Specifications
- (8) BS EN 61252:1997 Electroacoustics. Specifications for personal sound exposure meters
- (9) BS 7580:1997 Specification for the Verification of Sound Level Meters
- (10) HSE Guidance Note HSG138. Sound Solutions. Techniques to Reduce Noise at Work
- (11) BS 4142:1997 Method of Rating Industrial Noise Affecting Mixed Residential and Industrial Areas
- (12) BS 5228:1997 Parts 1-4 Code of Practice for Noise Control on Construction and Open Sites

### Course Date/Venue

| Session(s) | Date                 | Venue                                                                     |
|------------|----------------------|---------------------------------------------------------------------------|
| 1          | April 05-09, 2026    | Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE                    |
| 2          | November 22-26, 2025 | Crowne Meeting Room, Crowne Plaza Al Khobar, an IHG Hotel, Al Khobar, KSA |

### Training Methodology

All our Courses are including **Hands-on Practical Sessions** using equipment, State-of-the-Art Simulators, Drawings, Case Studies, Videos and Exercises. The courses include the following training methodologies as a percentage of the total tuition hours:-

- 30% Lectures
- 20% Practical Workshops & Work Presentations
- 30% Hands-on Practical Exercises & Case Studies
- 20% Simulators (Hardware & Software) & Videos

In an unlikely event, the course instructor may modify the above training methodology before or during the course for technical reasons.

### Accommodation

Accommodation is not included in the course fees. However, any accommodation required can be arranged at the time of booking.

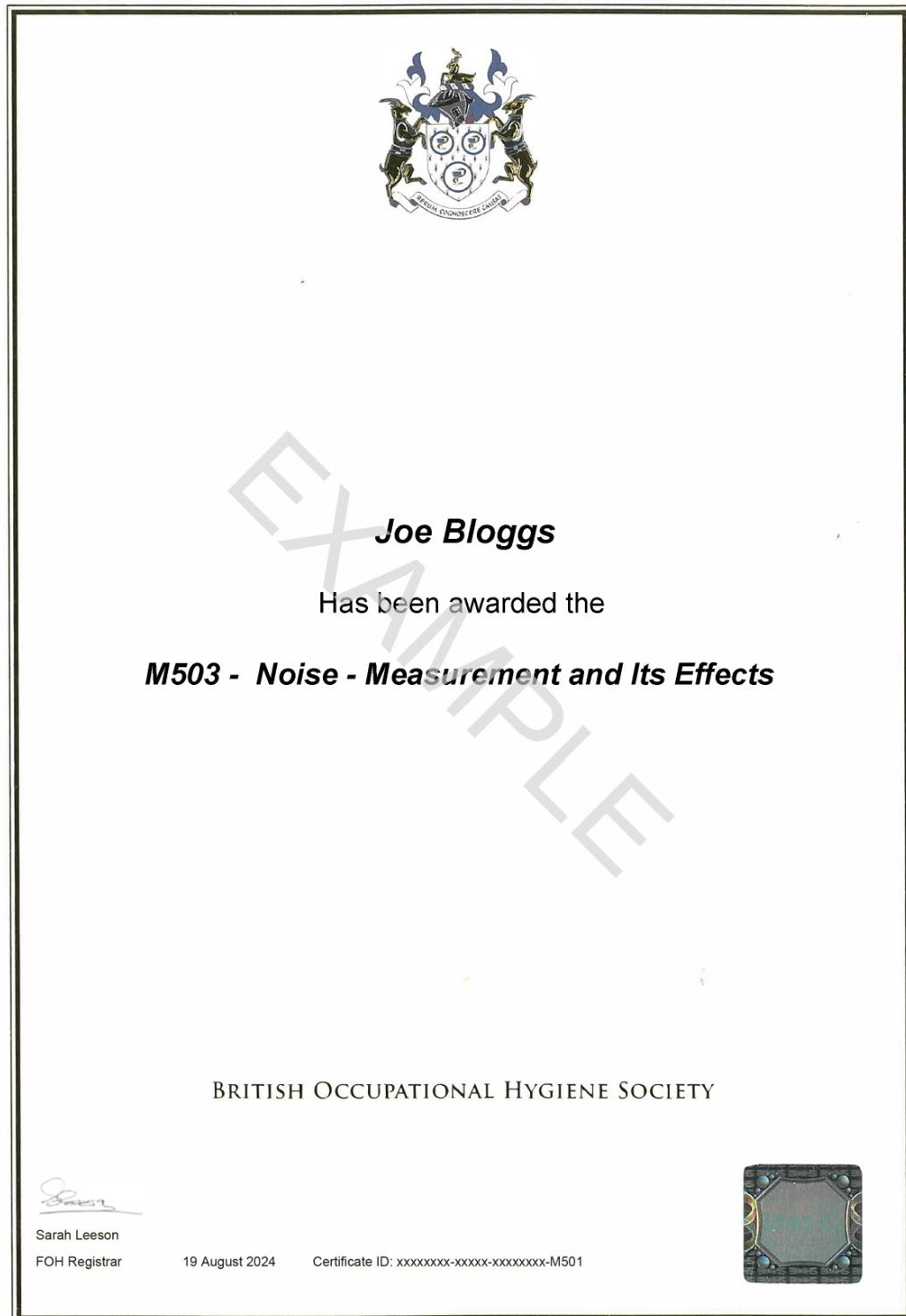


**Course Certificate(s)**

- (1) BOHS-M503 – Noise – Measurement and Its Effects will be awarded to participants who have successfully completed the course and passed all the parts (A and B) within 12 months.

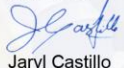
**BOHS Certificate(s)**

The following certificate is a sample of the BOHS certificates that will be issued to successful candidates:-





- (2) Official Transcript of Records will be provided to the successful delegates with the equivalent number of ANSI/IACET accredited Continuing Education Units (CEUs) earned during the course.

| * Haward Technology * CEUs * Haward Technology * CEUs * Haward Technology * CEUs * Haward Technology *                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                               |                      |                      |       |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
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| <div><div><b>Haward Technology Middle East</b><br/>Continuing Professional Development (HTME-CPD)</div><div><b>CEUs</b></div></div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                               |                      |                      |       |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
| <b>CEU Official Transcript of Records</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                               |                      |                      |       |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
| TOR Issuance Date:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                               | 15-Nov-23            |                      |       |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
| HTME No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                               | 74851                |                      |       |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
| Participant Name:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                               | Waleed Al Habeeb     |                      |       |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
| <table border="1"><thead><tr><th>Program Ref.</th><th>Program Title</th><th>Program Date</th><th>No. of Contact Hours</th><th>CEU's</th></tr></thead><tbody><tr><td>HE1940</td><td>Industrial Hygiene Certification Program<br/>BOHS-M503: Noise – Measurement and Its Effects<br/>(Accredited by the British Occupational Hygiene Society - BOHS)</td><td>November 11-15, 2023</td><td>37</td><td>3.7</td></tr></tbody></table>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                               |                      |                      |       | Program Ref. | Program Title | Program Date | No. of Contact Hours | CEU's | HE1940 | Industrial Hygiene Certification Program<br>BOHS-M503: Noise – Measurement and Its Effects<br>(Accredited by the British Occupational Hygiene Society - BOHS) | November 11-15, 2023 | 37 | 3.7 |
| Program Ref.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Program Title                                                                                                                                                 | Program Date         | No. of Contact Hours | CEU's |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
| HE1940                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Industrial Hygiene Certification Program<br>BOHS-M503: Noise – Measurement and Its Effects<br>(Accredited by the British Occupational Hygiene Society - BOHS) | November 11-15, 2023 | 37                   | 3.7   |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
| Total No. of CEU's Earned as of TOR Issuance Date                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                               |                      |                      | 3.7   |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
| <p>TRUE COPY</p>  <p>Jaryl Castillo<br/>Academic Director</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                               |                      |                      |       |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
| <p>Haward Technology has been approved as an Accredited Provider by the International Association for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this approval, Haward Technology has demonstrated that it complies with the ANSI/IACET 1-2018 Standard which is widely recognized as the standard of good practice internationally. As a result of their Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for programs that qualify under the ANSI/IACET 1-2018 Standard.</p> <p>Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking Continuing Education Units (CEUs) in accordance with the rules &amp; regulations of the International Association for Continuing Education &amp; Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.</p> |                                                                                                                                                               |                      |                      |       |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
| Haward Technology is accredited by                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                               |                      |                      |       |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
| <div></div>    |                                                                                                                                                               |                      |                      |       |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
| P.O. Box 26070, Abu Dhabi, United Arab Emirates   Tel.: +971 2 3091 714   E-mail: info@haward.org   Website: www.haward.org                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                               |                      |                      |       |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |
| * Haward Technology * CEUs * Haward Technology * CEUs * Haward Technology * CEUs * Haward Technology *                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                               |                      |                      |       |              |               |              |                      |       |        |                                                                                                                                                               |                      |    |     |

## Certificate Accreditations

Haward Technology is accredited by the following international accreditation organizations:-

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The British Occupational Hygiene Society (BOHS)

Haward Technology is an Approved Training Partner of the British Occupational Hygiene Society (BOHS) for the M201 and M500 series modules, which are designed to maintain a high standard of occupational hygiene education.

Together with BOHS, Haward Technology supports hygiene professionals in their mission to create safe working environments globally and is committed to advancing the practice of occupational hygiene to promote healthier workplaces worldwide.



## British Accreditation Council (BAC)

Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. BAC is the British accrediting body responsible for setting standards within independent further and higher education sector in the UK and overseas. As a BAC-accredited international centre, Haward Technology meets all of the international higher education criteria and standards set by BAC.

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The International Accreditors for Continuing Education and Training (IACET - USA)

Haward Technology is an Authorized Training Provider by the International Accreditors for Continuing Education and Training (IACET), 2201 Cooperative Way, Suite 600, Herndon, VA 20171, USA. In obtaining this authority, Haward Technology has demonstrated that it complies with the **ANSI/IACET 2018-1 Standard** which is widely recognized as the standard of good practice internationally. As a result of our Authorized Provider membership status, Haward Technology is authorized to offer IACET CEUs for its programs that qualify under the **ANSI/IACET 2018-1 Standard**.

Haward Technology's courses meet the professional certification and continuing education requirements for participants seeking **Continuing Education Units** (CEUs) in accordance with the rules & regulations of the International Accreditors for Continuing Education & Training (IACET). IACET is an international authority that evaluates programs according to strict, research-based criteria and guidelines. The CEU is an internationally accepted uniform unit of measurement in qualified courses of continuing education.

Haward Technology Middle East will award **3.7 CEUs** (Continuing Education Units) or **37 PDHs** (Professional Development Hours) for participants who completed the total tuition hours of this program. One CEU is equivalent to ten Professional Development Hours (PDHs) or ten contact hours of the participation in and completion of Haward Technology programs. A permanent record of a participant's involvement and awarding of CEU will be maintained by Haward Technology. Haward Technology will provide a copy of the participant's CEU and PDH Transcript of Records upon request.

### Course Instructor(s)

This course will be conducted by the following instructor(s). However, we have the right to change the course instructor(s) prior to the course date and inform participants accordingly:



**Mr. Peter Jacobs**, is a **Senior HSE Consultant** with almost **25 years** of extensive experience within **Oil & Gas, Refinery** and **Petrochemical** industries. His wide experience covers in the areas of **OHTA Modules** (Measurement of Hazardous Substances, Thermal Environment, Noise Measurement & Its Effects, Asbestos & Other Fibers, Control of Hazardous Substances, Ergonomics Essentials, Health Effects of Hazardous Substances), Advanced **Industrial Hygiene, Incident Command & Report Writing, HAZOP, HAZMAT, HAZID, Health Risk**

**Assessment, Modern Safety Risk Management, Process Risk Management, Root Cause Analysis** Techniques, **HSE Management System** Development & Implementation, **SAESI Hazardous Materials** for the **First Responder Operations (NFPA 472)**, **Industrial Safety & Housekeeping, Job Safety & Hazard Analysis, Hazardous Substances** Measurement, **Workplace** Control, **Physical Agents, Emergency Response, Chemical & Biological** Operations, **Basic Safety & Loss Prevention, Safety in Chemical Laboratory, Confined Space Safety, Industrial Hygiene, Occupational Health & Hygiene, Ergonomics, Biological** Assessment, **Radiation** with Radon/Thoron Assessment, **Radiation** Protection Safety, **Radiation** Monitoring, **Natural Radiation** Sources, **Nuclear** Regulatory Act, **Industrial Ventilation, Air Pollution Dispersion** Modelling, **Basic Clandestine Drug Laboratory** Investigation, **Chemical** Engineering, **Fire** Safety & Evacuation, **Evacuation** Safety, **Safety** Orientation, **Hand & Power Tools** Safety, **Isokinetic Stack Sampling, Dust** Exposure, **Quantifying Workplace Stressors, Noise & Airborne Pollutants, Thermal** Stress, **Illumination, Mine Health & Safety, Statistical Method Validation, Legal** Audit Compliance, **Riot & Crowd Control, ISO 14000, OHSAS 18000, ISO 17025 and ISO 9000.**

During his career life, Mr. Jacobs has gained his practical and field experiences through his various significant positions and dedication as the **Forensic Science Laboratory Manager, Occupational Hygienist, Radiation Protection Officer, Lead Practitioner, Safety, Health & Environmental (SHE) Specialist, First Responder, OHS Inspector, Ambulance Assistant** and **LPG Distributor Auditor** from various international companies like the Sedulitas, Richards Bay Minerals, Sasol and South African Police Service.

Mr. Jacobs has a **Master's** degree in **Public Health – Occupational Hygiene**, a **National Diploma in Purchasing Management** and an **Intermediate Certificate in Mine Environmental Control** an **Accredited South African Emergency Services Institute (SAESI)**. Further, he is a **Certified Instructor/Trainer**, an Appointed Commissioned Officer, a SAIOH/ IOHA President, an Assessor/Moderator of Health & Welfare SETA, a **Registered Occupational Hygienist** of the Southern African Institute for Occupational Hygiene, awarded as a SAIOH **Occupational Hygienist** of the Year Award and a well-regarded member of the British Occupational Hygiene Society (**BOHS**), Mine Ventilation Society of South Africa (MVSSA) and South African Radiological Protection Association (SARPA). He has further delivered numerous trainings, courses, seminars, workshops and conferences worldwide.

**Course Fee**

**US\$ 7,500** per Delegate + **VAT**. This rate includes H-STK® (Haward Smart Training Kit), buffet lunch, coffee/tea on arrival, morning & afternoon of each day

**Exam Fee**

**US\$ 175** per Delegate + **VAT**

**Course Program**

The following program is planned for this course. However, the course instructor(s) may modify this program before or during the course for technical reasons with no prior notice to participants. Nevertheless, the course objectives will always be met:

**Day 1**

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0730 – 0800 | Registration & Coffee                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 0800 – 0815 | Welcome & Introduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 0815 – 0830 | <b>PRE-TEST</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 0830 – 0930 | <b>Physics of Noise: Properties of Sound</b><br>Propagation of Sound by Longitudinal Wave Motion • Relationship Between Frequency, Wavelength & Velocity • Velocity of Sound – Dependence on Temperature & Bulk Modulus • Infra Sound & Ultrasound – Definitions & Common Sources • Simple Harmonic Motion                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| 0930 – 0945 | Break                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 0945 – 1130 | <b>Physics of Noise: Definitions &amp; Measurements Units – Noise</b><br>Sound Pressure & Sound Pressure Level • Sound Intensity & Intensity Level, Reference Values • Range of Sound Pressures in Audio Range • Definition & Application of Decibel Scale • Relationship Between Sound Pressure & Sound Power Level • Time Varying Sources, Definition & Use of Equivalent Continuous Sound Level • Characteristics of Impulse & Impact Noise • Equivalent Continuous Sound Level & Usage • Understanding of Weighting Scales, a & C, Comparison with Linear Levels & Awareness of Other Weighting Scales • Frequency Characteristics of Sound • Octave, Third Octave & Narrow Band Spectra • Summation of Sound Pressure Levels & Calculation of Sound Power Levels |
| 1130 – 1230 | <b>Human Response to Noise: The Ear &amp; its Response to Sound</b><br>Structure of the Ear - Outer, Middle & Inner Ear • Frequency Selectivity & Auditory Filter, Masking, Stereo Cilia, Aural Reflex • Trauma, Tinnitus, Damage to Hair Cells • Temporary Threshold Shift & Recovery Times & Permanent Threshold Shift • Noise Induced Hearing Loss • Relationship Between Hearing Loss, Noise Exposure Levels & Exposure Times • Speech Frequencies • Speech Interference Levels, Loudness & Phon Scales                                                                                                                                                                                                                                                           |

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1230 – 1330 | Lunch                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 1330 – 1500 | <b>Human Response to Noise: Audiometry</b><br>The Role of Audiometry in Industry, • a Guide to Audiometric Testing Programmes • Audiometer Types - Screening, Diagnostic, Research • Test Signal Frequencies, Pure Tone & Bone Audiometry • Audiogram Accuracy - Sources of Error, Ambient Noise in Audiometer Booths • Nonorganic Hearing Loss, Organic Hearing Loss • Presbycusis, Noise Induced Hearing Loss - 4 kHz Dip • Understand the Significance of Hearing Loss Level |



|             |                                                                                                                                                                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1500 – 1515 | Break                                                                                                                                                                                                                                                                 |
| 1515 - 1620 | <b>Human Response to Noise: Noise Exposure Limits</b><br><i>Understand the Significance of Exposures for Daily &amp; Weekly Personal Noise Exposures &amp; the Risks of Hearing Damage • Understand the Significance of Exposures to Infra Sound &amp; Ultrasound</i> |
| 1620 – 1630 | <b>Recap</b><br><i>Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today &amp; Advise them of the Topics to be Discussed Tomorrow</i>                                                                      |
| 1630        | End of Day One                                                                                                                                                                                                                                                        |

## Day 2

|             |                                                                                                                                                                                                                                                                                                                                                 |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0830 – 0930 | <b>Machinery Noise</b><br><i>Power Sources - Electrical Motors • Fluid Movers - Air Movers, Pumps, Sources of Noise Generation, Hydraulic Noise • Understanding Valve Noise, Jet Noise &amp; Duct Noise • Impact Noise &amp; Sources</i>                                                                                                        |
| 0930 – 0945 | Break                                                                                                                                                                                                                                                                                                                                           |
| 0945 - 1230 | <b>Machinery Noise (cont'd)</b><br><i>Compressor Types &amp; Characteristics • Machine Tools &amp; Handheld Power Tools, Woodworking Machinery • Tonal Components from Rotating Machinery, Fan Blade Passage &amp; Gear Meshing Frequency • Near Field &amp; Far Field &amp; Implications for Sound Measurements</i>                            |
| 1230 – 1330 | Lunch                                                                                                                                                                                                                                                                                                                                           |
| 1330 – 1500 | <b>Assessment of Noise Risk: Sound Level Meters</b><br><i>Basic Principle of Operational Components with Consideration of Simple Digital Processing Techniques • Understanding of Different Classifications of Sound Level Meters including an Understanding of Type &amp; the Accuracy at Reference &amp; in Field Conditions</i>              |
| 1500 – 1515 | Break                                                                                                                                                                                                                                                                                                                                           |
| 1515 – 1620 | <b>Assessment of Noise Risk: Sound Level Meters (cont'd)</b><br><i>Microphone Types; Polarised, Pre-Polarised, Piezoelectric &amp; Knowledge of Others &amp; Limitations • Directional Characteristics of Sound Level Meter &amp; Microphones • Operational Considerations E.G. Battery Checks, Calibration, Wind Effects, Body Reflections</i> |
| 1620 – 1630 | <b>Recap</b><br><i>Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today &amp; Advise them of the Topics to be Discussed Tomorrow</i>                                                                                                                                                |
| 1630        | End of Day Two                                                                                                                                                                                                                                                                                                                                  |

## Day 3

|             |                                                                                                                                                                                                                                                                                                                                                                       |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0830 – 0930 | <b>Assessment of Noise Risk: Frequency Analysis</b><br><i>Octave Band &amp; Third Octave Band Analysis - Characteristics &amp; Filter Band Widths • Analogue &amp; Digital Filters • Narrow Band Analysis • Current Instrumentation for Real Time Analysis. • Uses of Frequency Analysis for Noise Source Identification • Time History Analysis &amp; Techniques</i> |
| 0930 – 0945 | Break                                                                                                                                                                                                                                                                                                                                                                 |
| 0945 - 1230 | <b>Assessment of Noise Risk: Personal Noise Dosimetry</b><br><i>Principles of Instrumentation Operation, Field Accuracy &amp; Sources of Error • Importance of Supporting Dosimeter Assessments with Appropriate Sound Level Meter Measurements • Instrument Types &amp; Facilities, Supporting Software • Sampling Techniques &amp; Sources of Error</i>             |



|             |                                                                                                                                                                                         |
|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1230 – 1330 | Lunch                                                                                                                                                                                   |
| 1330 – 1500 | <b>Assessment of Noise Risk: Sound Power &amp; Sound Intensity Measurements</b><br>Uses & Significance of Sound Power & Intensity • Sound Power - Reference Sources & Field Measurement |
| 1500 – 1515 | Break                                                                                                                                                                                   |
| 1515 – 1620 | <b>Assessment of Noise Risk: Sound Power &amp; Sound Intensity Measurements (cont'd)</b><br>Sound Intensity - Instrumentation for Measurement                                           |
| 1620 – 1630 | <b>Recap</b><br>Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today & Advise them of the Topics to be Discussed Tomorrow   |
| 1630        | End of Day Three                                                                                                                                                                        |

#### Day 4

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0830 – 0900 | <b>Noise Control &amp; Hearing Protection: Controlling the Noise Generated at Source By</b><br>Avoiding Impacts • Increasing Damping & Use of Flexible Material to Reduce Spread of Sound Through a Machine/Pipework • Use of Silencers to Minimise Air Noise at Exhausts • Use of Low Noise Air Nozzles, Pneumatic Ejectors and Cleaning Guns • Matching Air Supply Pressure to Needs of Air Powered Equipment • Optimising the Design of Fans, Fan Casings and Compressors                                       |
| 0900 – 0930 | <b>Noise Control &amp; Hearing Protection: Controlling the Noise Generated at Source By (cont'd)</b><br>Modification of the Routes by Which Noise Reaches Workplaces (Reverberation; Use of Sound Absorbing Material to Control Reflections; Use of Silencers to Reduce Noise Transmitted Along Pipes/Ducts; Use of Anti-Vibration Mountings Under Machines & Non- Rigid Couplings; Use of Full or Partial Enclosure of Machines; Local Use of Screens Faced with Sound-Absorbing Material; Use of "Noise Refuge") |
| 0930 – 0945 | Break                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 0945 – 1230 | <b>Noise Control &amp; Hearing Protection: Controlling the Noise Generated at Source By (cont'd)</b><br>Use of Distance & Time to Minimise Noise Exposure (Relocate Noisy Fans/Exhausts/Compressors Away from People; Use of Remote Control or Automated Equipment to Minimise Noise Exposures; Segregation of Noisy Areas & Limit to Essential Personnel)                                                                                                                                                         |
| 1230 – 1330 | Lunch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 1330 – 1500 | <b>Noise Control &amp; Hearing Protection: Control of Noise Generated by Administrative Means</b><br>Good Housekeeping • Planning • Maintenance • General Good Management • The Necessity of Noise Reduction Measures for Machines, Tools, Plant & Equipment to be Considered at the Design Stage • the Preparation of a Specification Outlining Acceptable Noise Levels Generated by New Equipment Particularly where the Noise May Affect Personnel                                                              |
| 1500 – 1515 | Break                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1515 – 1620 | <b>Noise Control &amp; Hearing Protection: Hearing Protection</b><br>Description of Various Types Available • Performance Attenuation • Individual Variability in Attenuation, Mean Attenuation, Standard Deviation & Assumed Protection including Calculations • Evaluation of Performance Against Workplace Noise Spectra • Selection of Protection - Weight, Cost, Comfort, Adjustability • Explanation of when & Why Protectors Are Necessary • Limitations of Ear Protectors (Partial Use in Noisy Areas) |
| 1620 – 1630 | <b>Recap</b><br>Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today & Advise them of the Topics to be Discussed Tomorrow                                                                                                                                                                                                                                                                                                                          |
| 1630        | End of Day Three                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## Day 5

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 0830 – 0930 | <b>Introduction to Environmental Noise: Propagation of Sound</b><br>Sources of Environmental Noise e.g. Factory & Machinery Emissions, Traffic, Trains, Aircraft • Attenuation with Distance, Spherical Wavefronts & Point Sources, Inverse Square Law, Free Field Radiation • Propagation of Noise from Line Source • Effects of Wind, Temperature Gradients, Humidity & Precipitation, Absorption by Natural Features - Ground Absorption, Air Absorption & Absorption by Vegetation |
| 0930 – 0945 | Break                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 0945 – 1130 | <b>Introduction to Environmental Noise: Instrumentation</b><br>Sound Level Meters with Ln Facility • Noise Data Loggers, Environmental Analysers • Tape Recorders - Data Recorders & Analogue, Dynamic Range • Frequency Analysis Octave, Third Octave, Narrow Band • Protection of Instrumentation, Temperature, Wind, Humidity. Calibration Requirements                                                                                                                             |
| 1130 - 1230 | <b>Introduction to Environmental Noise: Measurement &amp; Assessment</b><br>Understand Appropriate Techniques for Assessing Environmental Noise • Selection of Measurement Locations • Understanding Specific Noise Level Laeq & Background Noise LA90 • Measurement Periods. Sources of Errors & Variation in Measured Levels • Influence of Environmental Conditions. Consideration of Tonal Components • Reporting Protocol & Presentation                                          |
| 1230 - 1330 | Lunch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1330 - 1500 | <b>Standards &amp; Good Practice: Noise</b><br>Understand the Relevant Exposure Standards for Noise, All Aspects of a Good Hearing Conservation Management Programme (Including Assessment, Control, Training, Hearing Protection Inspection, Audit, Audiometry and how they Combine to Provide Effective Employee Protection) and the Specification of Equipment at Design and Purchase to Limit the Impact on the Noise Levels in A Working Environment                              |
| 1500 – 1515 | Break                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| 1515 - 1545 | <b>Standards &amp; Good Practice: Environmental Noise</b><br>Understand How to Interpret Environmental Noise Measurements, including the Intermittent or Tonal Components in the Noise                                                                                                                                                                                                                                                                                                 |
| 1545 - 1600 | <b>Course Conclusion</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 1600 – 1615 | <b>POST-TEST</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 1615 – 1630 | Presentation of Course Certificates                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1630        | End of Course                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |



### **MOCK Exam**

Upon the completion of the course, participants have to sit for a MOCK Examination similar to the exam of the Certification Body through Haward's Portal. Each participant will be given a username and password to log in Haward's Portal for the MOCK exam during the 30 days following the course completion. Each participant has only one trial for the MOCK exam within this 30-day examination window. Hence, you have to prepare yourself very well before starting your MOCK exam as this exam is a simulation to the one of the Certification Body.

### **Examinations & Assessment**

Candidates are required to pass all of the following parts (A and B below) to be awarded this qualification.

#### **(A) Practical Assessment**

The practical assessment is conducted by the Tutor during the relevant parts of the course for all candidates. This is to ensure that each candidate can demonstrate their individual ability and correct method.

The practical exercises will involve:

- The setting up of a noise meter and readings from several noise sources from differing positions
- The set up and use of individual noise dose meters
- The measurement of octave band levels of a noisy environment

Full details of the practical requirements and individual candidate reporting can be found in the Practical Evaluation Report which is available from [www.bohs.org](http://www.bohs.org)

#### **(B) Written Examination (Update as necessary)**

This is an open-book examination comprising of 40 (160 marks) short-answer questions illustrated by photographs and diagrams as appropriate to be answered in 2 hours. Each question is worth 4 marks

The examination covers all sections of the syllabus and is overseen by an invigilator.

The pass mark for this examination is 50 %

### Simulator (Hands-on Practical Sessions)

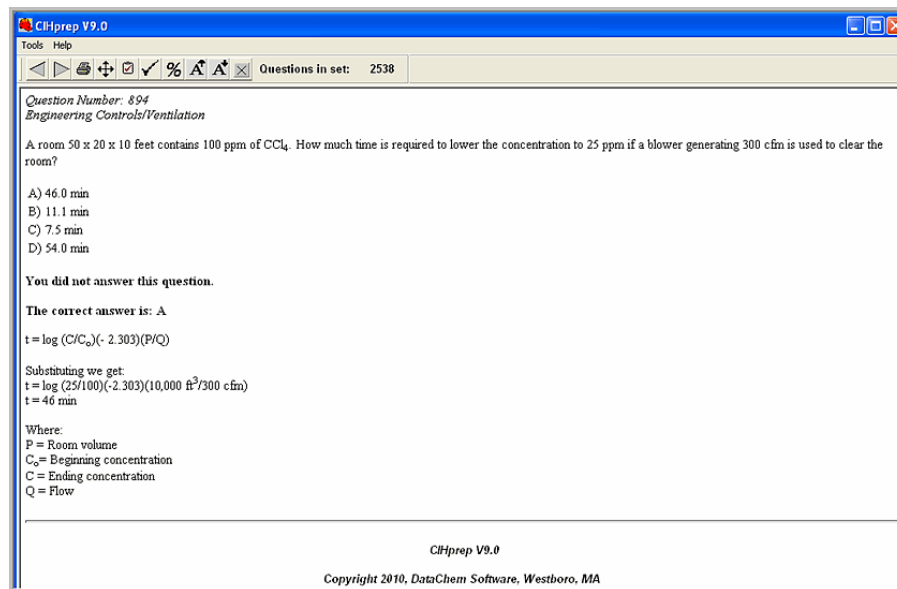
Practical sessions will be organized during the course for delegates to practice the theory learnt. Delegates will be provided with an opportunity to carryout various exercises using our state-of-the-art “Sound Level Meter”, “Industrial Hygiene Virtual Laboratory” and “CIHprep V9.0 ” simulators.



**Sound Level Meter**



**Industrial Hygiene Virtual Laboratory Simulator**



### CIHprep V9.0 Simulator

#### **Course Coordinator**

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