COURSE OVERVIEW RE0804
Condition Monitoring (V-CAT3)
(Mobius Institute)

Course Title
Condition Monitoring (V-CAT3)
(Mobius Institute)

Course Date/Venue
September 13-17, 2026/Tamra Meeting Room, Al Bandar Rotana Creek, Dubai, UAE

Course Reference
RE0804

Course Duration/Credits
Five days/3.8 CEUs/38 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 is designed to provide participants with a detailed and up-to-date overview of ISO Vibration Level III in accordance with ISO 18436. It covers the signal processing, time waveform analysis and phase analysis; the dynamics natural frequencies and resonance, mass, stiffness and damping as well as SDOF and MDOF; the testing for natural frequencies, operating deflection shape (ODS) analysis, modal analysis and intro to FEA; and correcting resonances by the effect of mass and stiffness, beware of nodal points, adding damping, "trial and error" and "scientific" approach, isolation, tuned absorbers and tuned mass dampers.

During this interactive course, participants will learn the rolling element bearing fault detection and journal bearing fault detection; the electric motor testing, unique fault conditions, flow turbulence, recirculation and cavitation of pumps, fans and compressors; the gearbox fault detection and general maintenance repair activities; the balancing process, ISO balance grades and shaft alignment procedures; running successful condition monitoring program; and reviewing relevant ISO standards.

Course Objectives/Outcomes & Benefits for the Participants

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

- Get prepared for the next Vibration Analyst exam and have enough knowledge and skills to pass such exam in order to get certified as "*Vibration Analyst: Category III"* in accordance with ISO 18436 standards from Mobius Institute
- Carryout signal processing, time waveform analysis and phase analysis
- Discuss dynamics natural frequencies and resonance, mass, stiffness and damping as well as SDOF and MDOF
- Employ testing for natural frequencies, operating deflection shape (ODS) analysis and modal analysis and intro to FEA
- Correct resonances by the effect of mass and stiffness, beware of nodal points, adding damping, "trial and error" and "scientific" approach, isolation, tuned absorbers and tuned mass dampers
- Implement rolling element bearing fault detection and journal bearing fault detection
- Apply electric motor testing and identify the unique fault conditions, flow turbulence, recirculation and cavitation of pumps, fans and compressors
- Carryout gearbox fault detection, general maintenance repair activities, review of the balancing process, ISO balance grades and shaft alignment procedures
- Run successful condition monitoring program and review relevant ISO standards

Who Should Attend

This course provides an overview of all significant aspects and considerations of ISO Vibration Analysis Category III for those who are confident with spectrum analysis but wishes to push on and learn more about signal processing, time waveform and phase analysis, cross-channel testing, machine dynamics and fault correction. This includes maintenance, reliability, rotating equipment, process, control and instrumentation personnel, engineers, maintenance supervisors, mechanical foremen, specialists and other technical staff.

Exam Eligibility & Structure

Exam candidates shall have the following minimum prerequisites:-

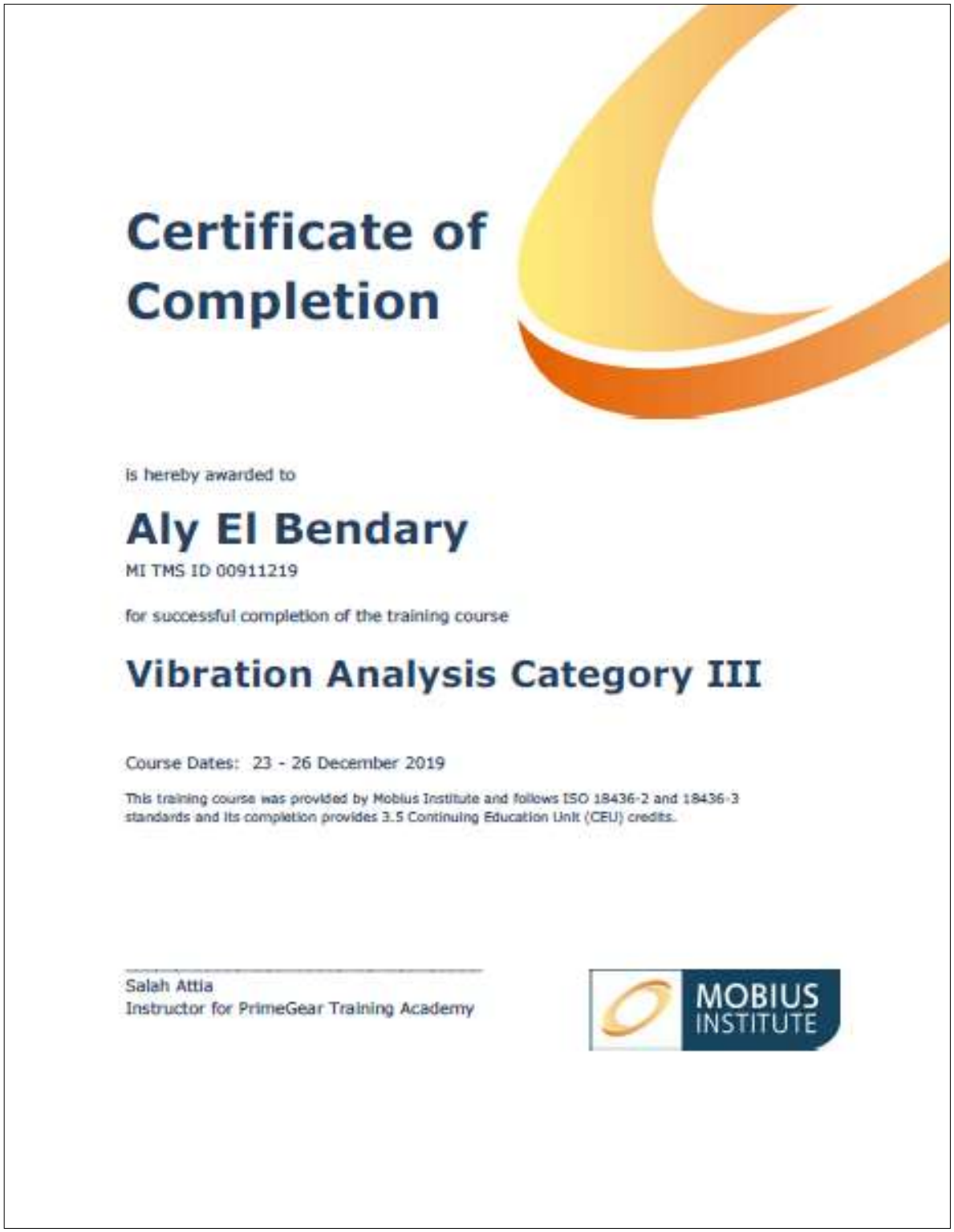
- Training course completed
- 36-months of practical vibration analysis work experience, verified by supervisor/manager
- Have previously been certified to VCAT-II by a MIBoC-approved certification body
- Pass the exam

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) Internationally recognized certificates will be issued to all participants of the course.



Certificate of Completion

is hereby awarded to

Aly El Bendary

MI TMS ID 00911219

for successful completion of the training course

Vibration Analysis Category III

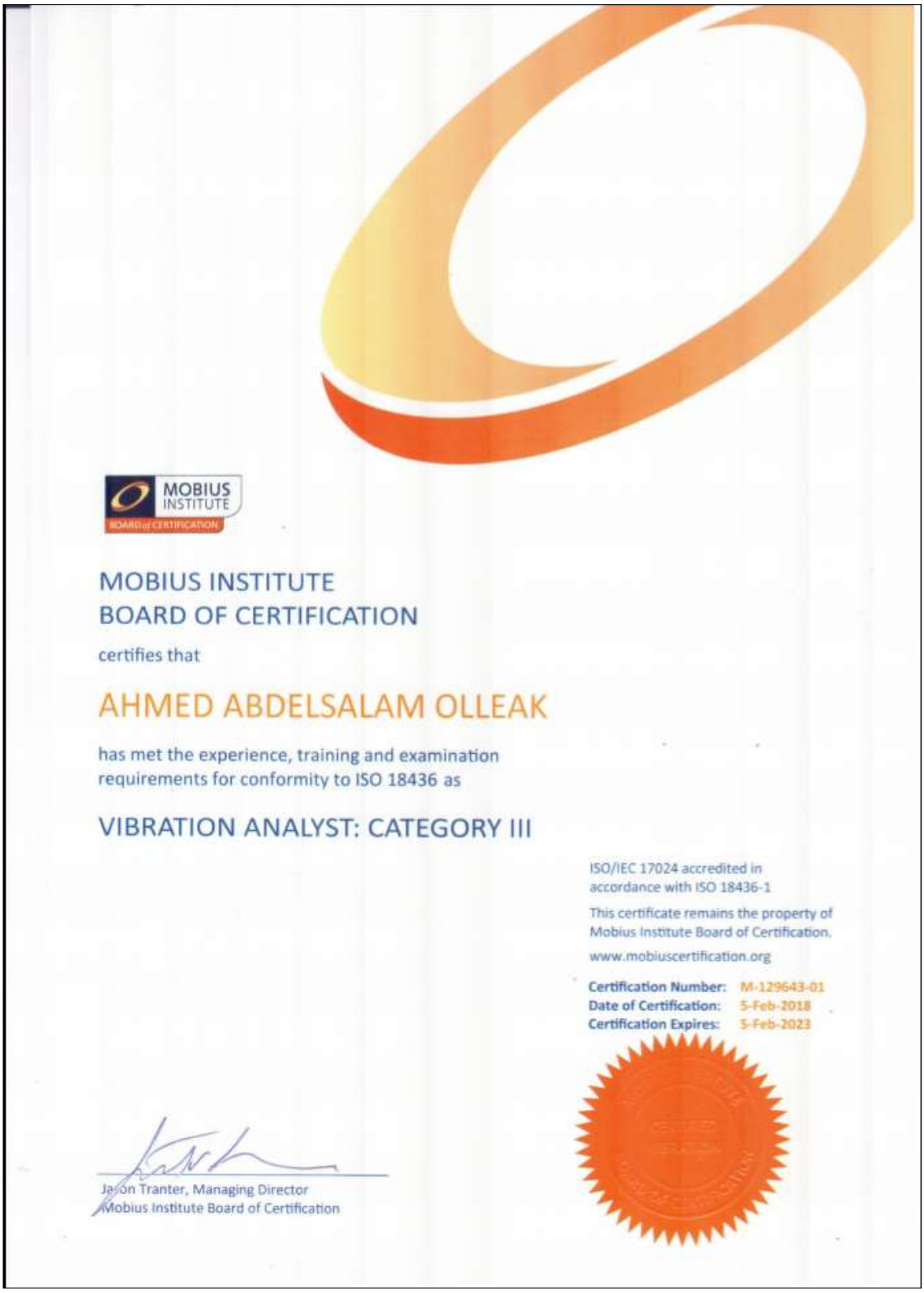
Course Dates: 23 - 26 December 2019

This training course was provided by Mobius Institute and follows ISO 18436-2 and 18436-3 standards and its completion provides 3.5 Continuing Education Unit (CEU) credits.

Salah Attia
Instructor for PrimeGear Training Academy

MOBIUS INSTITUTE

(2) Mobius Institute will certify the participants who will pass the examination for ***Vibration Analyst: Category III***.



MOBIUS INSTITUTE
BOARD of CERTIFICATION

MOBIUS INSTITUTE
BOARD OF CERTIFICATION

certifies that

AHMED ABDELSALAM OLLEAK

has met the experience, training and examination requirements for conformity to ISO 18436 as

VIBRATION ANALYST: CATEGORY III

ISO/IEC 17024 accredited in accordance with ISO 18436-1

This certificate remains the property of Mobius Institute Board of Certification.

www.mobiuscertification.org

Certification Number: M-129643-01
Date of Certification: 5-Feb-2018
Certification Expires: 5-Feb-2023

Jason Tranter, Managing Director
Mobius Institute Board of Certification

(3) 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 Middle East

Continuing Professional Development (HTME-CPD)

CEU Official Transcript of Records

TOR Issuance Date: 14-Nov-25

HTME No. 74851

Participant Name: Waleed Al Habeeb

Program Ref.	Program Title	Program Date	No. of Contact Hours	CEU's
RE0804	Condition Monitoring (V-CAT3) (Mobius Institute)	Nov 10-14, 2025	38	3.8

Total No. of CEU's Earned as of TOR Issuance Date 3.8

TRUE COPY

Jaryl Castillo
Academic Director

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.

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 Association 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 is accredited by

P.O. Box 26070, Abu Dhabi, United Arab Emirates | Tel.: +971 2 3091 714 | E-mail: info@haward.org | Website: www.haward.org

Certificate Accreditations

Haward's certificates are accredited by the following international accreditation organizations: -

- Mobius Institute Board of Certification (MIBoC) Scheme

  Mobius Institute Board of Certification (**MIBoC**) is ISO/IEC 17024 and ISO 18436-1 accredited and provides globally recognised certification for Vibration Analysis, Infrared Thermography, Ultrasound and Asset Reliability. MIBoC is an impartial and independent entity that is directed by scheme and technical committees to ensure that its certification meets or exceeds the requirements defined by the applicable ISO standards. Haward Technology is a partner of various Mobius Training Partners.

- British Accreditation Council (BAC)

  Haward Technology is accredited by the **British Accreditation Council** for **Independent Further and Higher Education** as an **International Centre**. Haward's certificates are internationally recognized and accredited by the British Accreditation Council (BAC). 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.

- 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 **3.8 CEUs** (Continuing Education Units) or **38 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:

Dr. Motaz Othman PGDip, MSc, BSc, VIB Analyst CAT 3, VIB Specialist CAT 3, ARP-A, MRT, ML-1, is a **Senior Mechanical & Maintenance Reliability Engineer** with extensive years of industrial experience within the **Oil & Gas**, **Refinery** and **Petrochemical** industries. His expertise widely covers in the areas of Vibration **Analysis**, **Vibration** Techniques, Advanced **Vibration** Analysis, **Machinery Vibration** Analysis, **Vibration Correction** & **Rotating Equipment Alignment**, **Metric Vibration**, **Acoustic & Flow Induced Vibration**, **Thermal Imaging** Technology, **Precision Machinery Alignment**, **Laser Shaft Alignment**, **Mechanical & Shaft Alignment**, **Rotor** Balancing, **Machinery** Balancing, **Pump Technology**, **Hydraulic System** Operation, Maintenance & Troubleshooting, **Bearing Installation** & **Lubrication**, **Bearings** Maintenance & Selection, **Machinery** Maintenance, **Mechanical & Dry Gas Seal** Operation & Maintenance, **Heat Exchangers** Operation & Maintenance, **Boiler** Operation & Maintenance, **Maintenance Engineering & Condition Monitoring**, **Maintenance** Best Practice & Optimization, **Mechanical Fault** Diagnosis, **Maintenance** Benchmarking & Improvement, **Gas Turbine** Operation & Maintenance, **Compressor** Operation, Maintenance & Troubleshooting, **Shutdown & Turnaround**, **Oil Testing & Analysis**, **Borescope Inspection**, **Pumps** Operations & Maintenance, **Compressors** Operations & Maintenance, **Gas Turbines** Operations & Maintenance, Turbo Expander, Reliability-Centered Maintenance (**RCM**) and Risk-Based Inspection (**RBI**), **Spare Parts** Consumption, **Thermal Insulation** Replacement & Installation, **Piping & Fixed Equipment** Inspection, Root Cause Failure Analysis (**RCFA**), Root Cause Analysis (**RCA**), KPI Monitoring, Rockwell Automation, Azima and IT Concept.

During his career life, Dr. Motaz has gained his practical and field experience through his various significant positions and dedication as the **Technical Support Assistant General Manager**, **Inspection Engineer**, **Reliability Engineer**, **Borescope Inspector**, **Project Engineer**, **Maintenance Engineer**, and **Senior Instructor/Trainer** for numerous multi-billion companies including the GASCO, GE (General Electric), Chevron Angola, TEMSAH and BEHERA Contribution Port Saied.

Dr. Motaz holds a **PhD** in Project Management, **Executive Master's** degree in **Business Administration**, a **Bachelor's** degree in **Mechanical Engineering**, a **Post Graduate Diploma** in **Power Station** and a Diploma in Business Administration (**DBA**). Further, he is a **Certified Asset Reliability Practitioner** (**ARP-A**), a **Certified Vibration Specialist Level III**, a **Certified Infrared Thermography Level I**, a Maintenance Reliability Transformation (**MRT**) and a **Field Lubrication Category I** from the **Mobius Institute Board of Certification**. He has further delivered numerous trainings, courses, seminars, conferences and workshops internationally.

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.

Learning Design & Customization

This course can be customized to the exact requirements of clients. Haward Technology is so proud of our huge capabilities in tailoring our courses to the training needs of our valued clients.

Training Fee

US$ 7,000 per Delegate + **VAT**. This rate includes buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Exam Fee

US$ 655 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: ***Sunday, 13th September 2026***

0730 - 0800	*Registration & Coffee*
0800 - 0815	*Welcome & Introduction*
0815 - 0830	***PRE-TEST***
0830 – 0945	***Signal Processing*** *Filters: Low Pass, Band Pass, High Pass, Band Stop • Sampling, Aliasing, Dynamic Range • Signal-to-Noise Ratio • Resolution, Fmax, and Collection Time • Averaging: Linear, Overlap, Peak Hold, Time Synchronous • Windowing and Leakage • Order Tracking • Cross-Channel Measurements • Correlation and Coherence*
0945 – 1000	*Break*
1000 – 1200	***Time Waveform Analysis*** *Collecting Data – Ensuring You Have the Correct Setup • When Should You Use Time Waveform Analysis? • Diagnosing Unbalance, Misalignment, Bent Shaft, Eccentricity, Cocked Bearing, Resonance, Looseness and other Conditions*
1200 – 1300	*Lunch*

1300 – 1500	***Phase Analysis*** *Collecting Data • Bubble Diagrams • Diagnosing Unbalance, Misalignment, Bent Shaft, Eccentricity, Cocked Bearing, Resonance, Looseness, and Other Conditions*
1500 - 1215	*Break*
1515 - 1720	***Dynamics (Natural Frequencies and Resonance)*** *Natural Frequencies and Resonances • Mass, Stiffness and Damping • SDOF and MDOF*
1720 - 1730	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1730	*End of Day One*

Day 2: ***Monday, 14th September 2026***

0730 – 0945	***Testing for Natural Frequencies*** *Run-Up Coast Down Tests • Bode Plots and Nyquist (Polar) Plots • Impact and Bump Tests*
0945 – 1000	*Break*
1000 – 1200	***Operating Deflection Shape (ODS) Analysis*** *Can We Prove the Existence of a Natural Frequency? • Visualizing Vibration • Setting up the Job • Collecting Phase Readings Correctly • Interpreting the Deflection Shape • Using Motion Amplification*
1200 – 1300	*Lunch*
1300 – 1500	***Modal Analysis and Intro to FEA*** *How Does Modal Analysis Differ From ODS? • How Does Finite Element Analysis (FEA) Differ from Modal Analysis? • A Quick Review of the Modal Testing Process*
1500 - 1215	*Break*
1515 - 1720	***Correcting Resonances*** *The Effect of Mass and Stiffness • Beware of Nodal Points • Adding Damping • A "Trial and Error" Approach • A "Scientific" Approach • Isolation • Tuned Absorbers and Tuned Mass Dampers*
1720 - 1730	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1730	*End of Day Two*

Day 3: ***Tuesday, 15th September 2026***

0730 – 0945	***Rolling Element Bearing Fault Detection*** *Why Do Bearings Fail? • Cocked Bearing, Sliding on the Shaft or Inside the Housing, Looseness • EDM and DC Motors and VFDs • Bearing Frequencies and What to Do When You Don't Have All the Details • The Four Stages of Bearing Degradation*
0945 – 1000	*Break*

1000 – 1200	***Rolling Element Bearing Fault Detection (cont'd)*** *Ultrasound • High-Frequency Detection Techniques • Shock Pulse, Spike Energy, Peak vue, and other Techniques • Demodulation/Enveloping • Selecting the Correct Filter Settings • Spectrum Analysis • Time Waveform Analysis • Low-Speed Bearings*
1200 – 1300	*Lunch*
1300 – 1500	***Journal Bearing Fault Detection*** *What are Journal Bearings? • Measuring Displacement • Introduction to Orbit Plots • Using Your Analyzer to Acquire Orbit Plots • Introduction to Centerline Diagrams • Eccentricity Ratio • Glitch Removal • How the Orbit Changes with Pre-Load, Unbalance, Misalignment, Instabilities, Oil Whir and Whip*
1500 - 1215	*Break*
1515 - 1720	***Journal Bearing Fault Detection (cont'd)*** *Eccentricity Ratio • Glitch Removal • How the Orbit Changes with Pre-Load, Unbalance, Misalignment, Instabilities, Oil Whir and Whip*
1720 - 1730	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1730	*End of Day Three*

Day 4: ***Wednesday, 16th September 2026***

0730 – 0945	***Electric Motor Testing*** *How do Motors Work? • Diagnosing a Range of Fault Conditions: Eccentric Rotor, Eccentric Stator, Soft Foot, Phasing, Broken Rotor Bars, Rotor Bar and Stator Slot Pass Frequencies • Motor Current Analysis*
0945 – 1000	*Break*
1000 – 1200	***Pumps, Fans & Compressors*** *Unique Fault Conditions • Flow Turbulence, Recirculation, Cavitation*
1200 – 1300	*Lunch*
1300 – 1400	***Gearbox Fault Detection*** *Spectrum Analysis Versus Time Waveform Analysis • Wear Particle Analysis • Gearmesh, Gear Assembly Phase Frequency (and Common Factors) • Tooth Load, Broken Teeth, Gear Eccentricity and Misalignment, Backlash and More*
1400 – 1500	***Corrective Action*** *General Maintenance Repair Activities • Review of the Balancing Process and ISO Balance Grades • Review of Shaft Alignment Procedures*
1500 - 1515	*Break*
1515 - 1720	***Running a Successful Condition Monitoring Program*** *Defining the Program • Setting Baselines • Setting Alarms: Band, Envelope/Mask, Statistical • Setting Goals and Expectations (Avoiding Common Problems) • Report Generation • Reporting Success Stories*
1720 - 1730	***Recap*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Topics that were Discussed Today and Advise Them of the Topics to be Discussed Tomorrow*
1730	*End of Day Four*

Day 5:	***Thursday, 17th September 2026***
0730 – 0930	***Review Major Topics as a Preparation for the Exam***
0930 – 0945	*Break*
0945 – 1345	***Mobius COMPETENCY EXAM (4 Hours)***
1345 – 1400	*Break*
1400 – 1415	***Course Conclusion*** *Using this Course Overview, the Instructor(s) will Brief Participants about the Course Topics that were Covered During the Course*
1415 – 1430	*Presentation of Course Certificates*
1430	*Lunch & End of Course*

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 the state-of-the-art simulator "iLearnVibration".

iLearnVibration Simulator

Course Coordinator

Mari Nakintu, Tel: +971 2 30 91 714, Email: mari1@haward.org