



U CAT 1

ISO 18436-8 Category I UCAT I - Ultrasound Analysis

Distance Learning (Online) Training

Learn Ultrasound Analysis from the world's leading provider of ISO18436 condition monitoring training & certification. The Reliability Institute of Australia provides Mobius Institute online courses - the most understandable and interesting training available. The Mobius Crystal Clear™ training methodology is unique, using hundreds of 3D animations and software simulations that make complex concepts easier to understand.

Mobius Institute is ISO/IEC 17024 and ISO 18436-1 accredited, meaning that you are assured that your certification meets the highest global standards, and our training teaches you everything you need to know according to the ISO 18436 standard for Ultrasound analyst training. There is no more highly regarded training & certification available.

UCAT I - Ultrasound Analysis

- **Maintenance practices**
 - Reactive, preventive, condition-based, proactive
 - How to decide which is most appropriate
- **Condition monitoring**
 - Why it works
 - Overview of Vibration, infrared, oil analysis, wear particle analysis, and electric motor testing.
 - Detecting faults, root causes and quality control.
 - Acceptance Testing
- **Principles of sound**
 - What is sound, sound waves, and sine waves
 - Frequency, pitch, period, wavelength
 - Acoustic impedance, reflection, and transmission with different materials
 - The inverse distance rule
- **The application of ultrasound**
 - Friction, turbulence, impacting, arcing, tracking, corona
- **Ultrasound measurement**
 - Heterodyning
 - The decibel dB scale
 - Metrics: RMS, Peak, crest factor, and Kurtosis
 - Listening versus measuring
 - Severity determination
- **Report generation**
 - Providing actionable information
- **Case studies**
 - Many case studies are provided during the course
- **Collecting test data**
 - Safety precautions
 - Sensor types: contact vs non-contact, magnets, horns, parabolic dishes
 - Collecting good data
 - Sensitivity validation
 - Repeatability
 - Sensor positioning
 - Shielding and competing ultrasound sources
 - Waveforms and spectra
- **Data storage and management**
 - Setting up a good database
 - ISO 14224 as a guide
- **Leak detection**
 - Steam systems
 - Compressed air systems and gas
 - Pressurized systems and systems under vacuum
 - Leak detection
 - Tightness testing
- **Electrical testing**
 - Safety precautions
 - Corona, arcing, tracking
 - Partial discharge
- **Lubrication**
 - Concerns with traditional methods
 - On-condition lubrication
 - Avoiding over-greasing or under-greasing
- **Testing different assets types**
 - Valves, steam traps, bearings (low speed and high speed), compressors, pumps, hydraulic systems
 - A detailed explanation of all the above equipment and their failure modes

➤ HOW LONG IS THE CERTIFICATION VALID?

Certification is valid for five (5) years.

➤ HOW DO I RENEW MY CERTIFICATION?

We will endeavor to contact you before your certification expires, therefore it is important that you keep your TMS records up to date (TMS is the training management system you will use to register for the course and for certification). If you change roles, it is essential that you update your records. We also invite you to set a reminder in your calendar for five years hence to contact us.

➤ HOW DO I QUALIFY FOR RENEWAL?

As per the standard, we do not require you to attend our conferences or take our courses, however, we hope you will take advantage of www.mobiusconnect.com and the sites linked to Mobius CONNECT® so that your knowledge remains current. These sites are free of charge. When it is time to renew your certification, we will ask you to nominate an independent person who can provide evidence of continued work experience in the field of ultrasound condition monitoring for the previous five years without significant interruption. You will also be required to submit evidence of passing a hearing test at the time of renewal. There will be a small fee to renew your digital certificate and to renew your certification status with the accreditation body.

➤ WHAT ARE THE EXPERIENCE REQUIREMENTS FOR UCAT I?

You must have six months of experience generally associated with maintenance, reliability, and ultrasound testing. You will be asked to nominate an independent person who can verify that you have that experience.

➤ WHAT IS THE HEARING TEST?

As per the requirements of ISO 18436-8, candidates should be given hearing examinations to ensure natural or corrected hearing acuity exists in at least one ear. A record of the results should be retained and presented to MIBoC upon request. The individual should be capable of hearing a standard pure tone in an audiometry exam with results of an average of 25 dB hearing level or lower. This examination should be administered upon initial certification and upon renewal, be administered by a licensed professional, and a record of the test made available to MIBoC upon request.

Candidates who do not provide a record of passing the hearing test will receive conditional certification under which it becomes the responsibility of their employer to assess the candidate's hearing acuity and their suitability to perform ultrasound data collection and/or analysis. This condition of certification will be noted on the candidate's certificate.

UCAT I - Ultrasound Analysis

What will you learn from this course?

- About condition monitoring, including a summary of the most common technologies
- About reliability improvement
- How ultrasound testing and ultrasound-assisted lubrication plays a key role in reliability improvement
- About the fundamentals of sound: frequency, amplitude, wavelength, pitch, and period
- How it is measured and quantified: dB, RMS, peak, kurtosis, and crest factor
- How sound behaves: speed of sound, reflection, refraction, and transmission
- How ultrasound is detected in industrial settings
- How to take dependable, repeatable, high-quality readings
- About listening to ultrasound, and capturing and interpreting waveforms and spectra
- About how to set up software systems, including the naming of assets
- About impacts, friction, turbulence, cavitation, arcing, tracking, corona, and partial discharge
- How it can be used to detect faults in bearings, electrical systems, steam traps, valves, hydraulic equipment, pumps, compressors, and other equipment
- About how hydraulics, electrical systems, steam systems, compressors, bearings, pumps, valves, steam traps, and other components work – all with vivid, realistic 3D animations
- How to correctly lubricate bearings: not too much, not too little
- How to collect data and perform tests safely
- How to generate reports that will provide people with the information they really need

Learning Format:

On-Line training within an LMS (Learning Management System).

Video of studio-recorded sessions presented by Jason Tranter, the renowned Mobius CEO and founder using a combination of slides, animation and simulations.

Students can choose either **4 months study access or Life-Time access** (with no expiry date).

For both options, students can watch the videos more than once.

A printed Course manual is provided with either option.

Duration:

Minimum of 32 hours of training

Exam & Certification.

Online Exam by Invigilation (authorised supervision) with 70% passing grade. 2 hours, closed book, multiple choice Certification is valid for 5 Years.

Certification Prerequisite:

Prior experience is not required for the training course, but 6 months of experience is required for certification.

Enrol or learn more about other Classroom or On-Line training options.

Contact RELIABILITY INSTITUTE OF AUSTRALIA



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