

Workshop synopsis

The [Tribology and Machine Condition Monitoring group at UNSW](#) is a world leader in machine diagnostics and related fields. Having conducted a series of successful five-day short courses over the last few years, the group is now offering an updated and refreshed version of the course in a condensed two-day package. Topics covered on the first day will include: faults and degradation in common machine components, such as gears and bearings; diagnostic techniques, ranging from basic to advanced techniques; and modern signal processing for condition monitoring applications. The second day will cover a range of more specialised topics, including cepstrum analysis, machine learning for fault detection, and helicopter planetary gearbox diagnostics. The course will culminate in a panel discussion at the end of the second day, where participants will have the opportunity to ask questions of senior researchers in the field. This course would be suitable for junior researchers in machine condition monitoring, such as PhD students and post-doctoral researchers, established researchers new to the field, and experienced practitioners looking to enhance their knowledge in advanced machine diagnostics.

Venue: 727 Collins St, Melbourne, Australia

Dates: 27-28 March 2025

Key presenters and expertise

This workshop will be delivered by a world-class team of researchers, who recently established the [UNSW/INSA Joint International Lab](#). The main contributors are listed below in alphabetical order.

Prof. Jerome Antoni — Professor Jerome Antoni is at the forefront of machine condition monitoring and his work on cyclostationarity and blind source separation has had a major impact on the field. Being an Associate Editor of Mechanical Systems and Signal Processing (MSSP), he will share his valuable knowledge and experience with you in this workshop.



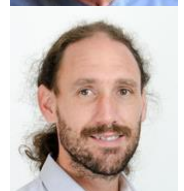
Prof. Zhongxiao Peng — With more than 20 years' experience, Zhongxiao is a world-class tribologist working within the team to solve complex diagnostic problems. Zhongxiao will contribute to the workshop providing insights into the typical degradation mechanisms of machine elements. The complementarity of tribological and condition monitoring expertise is a unique strength of this team.



Em/Prof. Robert B. Randall — The most experienced and renowned researcher in the field, considered by many the founder of modern vibration-based condition monitoring. Bob has pioneered numerous signal processing techniques for machinery fault detection, diagnostics and prognostics, and is regularly invited to give keynote talks and courses internationally. He is a Member of the Advisory Board of MSSP.



Dr Wade A. Smith — Dr Wade Smith has more than 12 years' experience in the field of machine condition monitoring and has developed his knowledge through a series of industry collaborations and government funded projects in the areas of bearing and gear diagnostics and prognostics. Wade is an Associate Editor of the Journal of Dynamics, Monitoring and Diagnostics.



Selected Topics

- Gear and bearing fault types and degradation mechanisms
- Classical diagnostic approaches
- Advanced signal processing and diagnostic techniques
- Planetary gearbox diagnostics
- Machine learning for fault detection
- Cepstrum analysis in condition monitoring

Who should attend?

- Researchers and research students who wish to learn and update their knowledge in the field
- Engineers in the field of machine maintenance, monitoring and diagnostics who wish to learn about advanced vibration-based technology for condition monitoring

Fees

- Full registration fee: \$1,500 (AUD)
- Student registration: \$800 (AUD)
- Registration fee includes attendance at all sessions across the two-day workshop, all presentation material, panel discussion Q&A session with subject matter experts, and day-time catering (coffee breaks and lunches)

Registration and contact

- To register please visit
www.eventbrite.com.au/e/unsw-machine-condition-monitoring-workshop-tickets-1013300116927
- If would like more information, please write to us via email
conditionmonitoring@unsw.edu.au