

# Unit Outline (Higher Education)

<b>Institute / School:</b>	Institute of Innovation, Science & Sustainability
<b>Unit Title:</b>	MACHINE CONDITION MONITORING AND FAULT DIAGNOSIS
<b>Unit ID:</b>	MREGC5006
<b>Credit Points:</b>	15.00
<b>Prerequisite(s):</b>	Nil
<b>Co-requisite(s):</b>	Nil
<b>Exclusion(s):</b>	Nil
<b>ASCED:</b>	030799

## Description of the Unit:

This unit provides a range of advanced topics on condition monitoring for engineering assets. It covers an understanding of condition monitoring, its benefits and techniques, visual inspection techniques, non-destructive testing, analysis techniques for wear debris/contaminants in lubricants, condition monitoring of electrical machines and vibration analysis. It also covers how to identify fault diagnosis techniques applied to condition assessment activities for systems and components. This is an elective unit for students interested in practicing condition monitoring and good asset management.

**Grade Scheme:** Graded (HD, D, C, P, MF, F, XF)

## Work Experience:

No work experience: Student is not undertaking work experience in industry.

**Placement Component:** No

**Supplementary Assessment:** Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment

**Course Level:**

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory	■	■	■	■	■	■
Intermediate	■	■	■	■	■	■
Advanced	■	■	■	■	✓	■

### Learning Outcomes:

#### Knowledge:

- K1.** Compare and describe use of visual inspection techniques, non-destructive testing, wear particle contaminant analysis for condition monitoring of assets or components.
- K2.** Apply and demonstrate effective use of performance and vibration analysis for condition monitoring of systems or components
- K3.** Develop plan and illustrate how machine condition monitoring techniques can be applied to system or components for fault assessments and alert level prediction of potential failures.
- K4.** Defend and justify investment in condition monitoring for systems or components through use of criticality ranking and estimation of benefits.

#### Skills:

- S1.** Demonstrate the ability to use condition monitoring on common plant items in industry, using the technologies of vibration analysis, performance analysis and visual inspection.
- S2.** Prepare and apply detailed plan for Non-Destructive Testing, wear debris analysis and electrical plant tests for the purpose of condition monitoring of systems or components.

#### Application of knowledge and skills:

- A1.** Apply condition monitoring to systems or components to monitor performance and trigger alert levels for maintenance actions.

#### Unit Content:

This unit covers an understanding of condition monitoring, its benefits and techniques, visual inspection techniques, non-destructive testing, analysis techniques for wear debris/contaminants in lubricants, condition monitoring of electrical machines and vibration analysis.

Topics may include:

- Introduction to condition monitoring.
- Three machine condition monitoring techniques covering Visual Inspection & Non-Destructive Testing.
- Performance analysis of assets.
- Vibration analysis.
- Data collection and analysis of vibration phase angle.
- Developing and implementing condition monitoring program.

#### Learning Task and Assessment:

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K2, K3, S1, S2, A1	Analysis and report on Condition Monitoring techniques and applications.	Analysis and report	20% - 40%

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K2, K3, K4, S1, S2, A1	Analysis of degradation and condition monitoring report of engineering system or component.	Analysis and report	20% - 40%
K1, K2, K3, K4, S1, S2, A1	Examination or online test	Examination or online test	60% - 40%

**Adopted Reference Style:**

Other (IEEE)

Refer to the [library website](#) for more information

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