

Title	Apply knowledge of aircraft instrument systems to the certification of aeronautical maintenance		
Level	6	Credits	30

Purpose	<p>This knowledge-based unit standard is one of a series intended for people certifying the release to service of aircraft or aeronautical components following maintenance or repair.</p> <p>People credited with this unit standard are able to certify the maintenance of aircraft avionics systems by applying knowledge of: basic instrument systems, gyroscopic instrument systems, cockpit displays and safety monitoring systems, fixed wing autopilots and flight directors, helicopter autopilots and flight directors, remote indicating compass systems, inertial navigation and reference systems, and oxygen systems to the certification of aeronautical maintenance.</p>
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Classification	Aeronautical Engineering > Aeronautical Maintenance Certification
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Available grade	Achieved
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Guidance Information

- 1 The Civil Aviation Authority of New Zealand (CAA) Aircraft Maintenance Engineer Licence – Subject 14, Instrument Systems is the national standard, and is linked to international standards.
- 2 This unit standard is aligned with the Civil Aviation Authority of New Zealand Advisory Circular AC66-2.14, Examination Syllabus for Subject 14, Instrument Systems and will be evidenced by meeting these requirements. This is available on the CAA website at <http://www.caa.govt.nz>.
- 3 *Applied knowledge* – will be in the context of aeronautical maintenance as defined by Civil Aviation Rules Part 1 as follows: ‘in relation to an aircraft or aircraft component, means all work and inspections performed to ensure the continued airworthiness of the aircraft or component, and all modifications’; will include making judgements regarding the scope, processes, and quality of maintenance for release to service certification; and will be in accordance with industry texts as defined by the candidate’s workplace or enterprise.

- 4 *Industry texts* include but are not limited to –
published aeronautical training manuals or text books;
enterprise exposition;
manufacturer publications;
government and local body legislation;
airworthiness or regulatory authority requirements.

Outcomes and performance criteria

Outcome 1

Apply knowledge of aircraft basic instrument systems to the certification of aeronautical maintenance.

Performance criteria

- 1.1 Knowledge of aircraft pitot static systems is applied.
- 1.2 Knowledge of aircraft altimeters is applied.
- 1.3 Knowledge of aircraft air speed indicators is applied.
- 1.4 Knowledge of aircraft air data computers and servo altimeters is applied.
- 1.5 Knowledge of aircraft temperature indicating systems is applied.
- 1.6 Knowledge of aircraft fuel flow and fuel quantity indicating systems is applied.
- 1.7 Knowledge of aircraft DC synchronous systems and engine speed indicating systems is applied.
- 1.8 Knowledge of aircraft engine indicating systems is applied.
Range piston engine, turbine engine.
- 1.9 Knowledge of aircraft heads-up displays is applied.
- 1.10 Knowledge of aircraft stall warning systems is applied.

Outcome 2

Apply knowledge of aircraft gyroscopic instrument systems to the certification of aeronautical maintenance.

Performance criteria

- 2.1 Knowledge of gyroscopic principles is applied.
- 2.2 Knowledge of aircraft artificial horizons is applied.
Range frequency wild systems, constant frequency systems.

2.3 Knowledge of aircraft directional gyroscopes is applied.

Outcome 3

Apply knowledge of aircraft cockpit displays and safety monitoring systems to the certification of aeronautical maintenance.

Performance criteria

3.1 Knowledge of aircraft electronic instrument and information systems is applied.

3.2 Knowledge of aircraft ground proximity warning systems is applied.

3.3 Knowledge of aircraft flight data and cockpit voice recording systems is applied.

3.4 Knowledge of aircraft vibration measurement is applied.

Outcome 4

Apply knowledge of fixed wing aircraft autopilots and flight directors to the certification of aeronautical maintenance.

Performance criteria

4.1 Knowledge of fundamentals of aircraft automatic control is applied.

4.2 Knowledge of aircraft autopilot attitude change signal detection is applied.

4.3 Knowledge of aircraft autopilot command signal processing is applied.

4.4 Knowledge of aircraft autopilot modes of operation is applied.

4.5 Knowledge of aircraft autopilot servomotors is applied.

4.6 Knowledge of aircraft autopilot automatic trim control is applied.

4.7 Knowledge of aircraft autopilot yaw damping is applied.

4.8 Knowledge of aircraft autopilot and navigation aid interface is applied.

4.9 Knowledge of aircraft flight directors is applied.

4.10 Knowledge of aircraft automatic landing systems is applied.

4.11 Knowledge of aircraft autothrottle systems is applied.

4.12 Knowledge of aircraft fly by wire systems is applied.

Outcome 5

Apply knowledge of helicopter autopilots and flight directors to the certification of aeronautical maintenance.

Performance criteria

- 5.1 Knowledge of helicopter automatic control fundamentals is applied.
- 5.2 Knowledge of helicopter stability and control is applied.
- 5.3 Knowledge of helicopter autopilot and navigation aid interface is applied.
- 5.4 Knowledge of helicopter flight director systems is applied.

Outcome 6

Apply knowledge of aircraft remote indicating compass systems to the certification of aeronautical maintenance.

Performance criteria

- 6.1 Knowledge of aircraft remote indicating compass fundamentals is applied.
- 6.2 Knowledge of aircraft remote reading compass system operation is applied.
- 6.3 Knowledge of aircraft attitude heading reference systems is applied.

Outcome 7

Apply knowledge of aircraft inertial navigation and inertial reference systems to the certification of aeronautical maintenance.

Performance criteria

- 7.1 Knowledge of aircraft inertial navigation systems is applied.
- 7.2 Knowledge of aircraft inertial navigation reference system stabilisation is applied.
- 7.3 Knowledge of aircraft inertial navigation system accelerometer corrections is applied.
- 7.4 Knowledge of aircraft inertial navigation system operational platforms is applied.
- 7.5 Knowledge of aircraft inertial navigation system integration is applied.
- 7.6 Knowledge of aircraft inertial navigation strapdown systems is applied.
- 7.7 Knowledge of aircraft inertial navigation laser gyroscopes is applied.
- 7.8 Knowledge of aircraft inertial reference systems is applied.

Outcome 8

Apply knowledge of aircraft oxygen systems to the certification of aeronautical maintenance.

Performance criteria

- 8.1 Knowledge of aircraft oxygen systems and components is applied.
- 8.2 Knowledge of aircraft continuous flow and pressure demand oxygen systems is applied.
- 8.3 Knowledge of aircraft liquid oxygen systems is applied.
- 8.4 Knowledge of aircraft chemical oxygen systems is applied.
- 8.5 Knowledge of aircraft portable oxygen systems is applied.
- 8.6 Knowledge of aircraft oxygen system servicing and safety precautions is applied.

Planned review date	31 December 2027
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	9 December 2010	31 December 2020
Review	2	28 September 2017	31 December 2024
Review	3	27 October 2022	N/A

Consent and Moderation Requirements (CMR) reference	0028
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact Ringa Hora Services Workforce Development Council qualifications@ringahora.nz if you wish to suggest changes to the content of this unit standard.