

Title	Demonstrate knowledge of human factors for commercial aircraft operations		
Level	5	Credits	8

Purpose	People credited with this unit standard are, in accordance with Subject No 34, for commercial aircraft operations, able to demonstrate knowledge of: general human factors; physiology and the effects of flight; flying and health; aviation psychology; ergonomics in relation to flying; and also to demonstrate knowledge of first aid and survival.
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Classification	Aviation> Aircraft Operation
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Available grade	Achieved
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Guidance Information

- 1 This unit standard is aligned with the relevant parts of the prescribed syllabi of the Civil Aviation Authority of New Zealand (CAA) for Subject No 34 for a commercial pilot licence. Credit will be awarded on meeting the requirements of the CAA-approved assessment or examination.
- 2 Commercial aircraft operations are those which are performed for hire or reward.
- 3 Definitions, abbreviations, and acronyms used in this unit standard are to be found in:
 - a *Civil Aviation Rules Part 1* on the CAA website at <https://www.caa.govt.nz>, and
 - b *Aeronautical Information Publication (AIP)* published by Aeronautical Information Management (AIM), PO Box 294, Wellington 6140 or on the AIM website at <http://www.aip.net.nz>.
- 4 All references to the CAA refer specifically to the Civil Aviation Authority of New Zealand.
- 5 Industry standards and recommended practices are those set in place by the CAA.
- 6 Industry texts may include but are not limited to – aircraft flight manuals, CAA Rules, CAA Advisory Circulars, CAA Flight Test Standards Guides, operator exposition.
- 7 In the context of this unit standard the term *human factors* are about human performance and human limitations both in the air and on the ground. It encompasses the medical, psychological, ergonomic, and engineering aspects associated with commercial aircraft operations.
- 8 For the purpose of this unit standard, *knowledge* refers to the knowledge, understanding, and application of the subject matter.

- 9 Industry requirements are that the candidate must meet the eligibility requirements of the Civil Aviation Act 1990 and the Civil Aviation Rules Part 61 for a commercial pilot licence.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of general human factors in accordance with Subject No 34.

Performance criteria

- 1.1 Airmanship, professionalism, and responsibility are defined and described in accordance with industry texts and standards.
- 1.2 Human factors, models and programmes are defined and described in accordance with industry texts and standards.

Outcome 2

Demonstrate knowledge of physiology and the effects of flight in accordance with Subject No 34.

Performance criteria

- 2.1 The atmosphere is described in accordance with industry texts and standards.
- 2.2 Circulation and respiratory systems are described in accordance with industry texts and standards.
- 2.3 The causes and effects of hypoxia are defined and described in accordance with industry texts and standards.
- 2.4 The causes and effects of hyperventilation are defined and described in accordance with industry texts and standards.
- 2.5 The causes and effects of entrapped gases are defined and described in accordance with industry texts and standards.
- 2.6 The causes and effects of decompression sickness is defined and described in accordance with industry texts and standards.
- 2.7 Vision and visual perception are described and identified in accordance with industry texts and standards.
- 2.8 Hearing and balance are described in accordance with industry texts and standards.
- 2.9 Spatial orientation is defined and described in accordance with industry texts and standards.

- 2.10 Gravitational forces are explained in accordance with industry texts and standards.
- 2.11 Motion sickness is described in accordance with industry texts and standards.
- 2.12 Flight anxiety is explained and described in accordance with industry texts and standards.

Outcome 3

Demonstrate knowledge of flying and health in accordance with Subject No 34.

Performance criteria

- 3.1 Fitness requirements to fly are described in accordance with industry texts and standards.
- Range includes but is not limited to – medical fitness.
- 3.2 The effects of alcohol and drugs on pilot performance are explained in accordance with industry texts and standards.
- 3.3 Effects of blood donation on the body are described in accordance with industry texts and standards.
- Range includes but is not limited to – recommended time period between donating blood and flying.
- 3.4 Environmental hazards present in the aviation environment are described in accordance with industry texts and standards.
- 3.5 Stress management is defined and described in accordance with industry texts and standards.
- 3.6 Sleep and fatigue (alertness management) are described and explained in accordance with industry texts and standards.
- 3.7 The effects and process of normal ageing are described in accordance with industry texts and standards.
- Range may include but is not limited to – physiological and behavioural changes.

Outcome 4

Demonstrate knowledge of aviation psychology in accordance with Subject No 34.

Performance criteria

- 4.1 Information processing is identified and described in accordance with industry texts and standards.

- 4.2 Situational awareness is defined and described in accordance with industry texts and standards.
- 4.3 Judgement and decision making is described and explained in accordance with industry texts and standards.
- 4.4 Social psychology and flight deck management are defined and explained in accordance with industry texts and standards.
- Range may include but is not limited to – crew resource management, teamwork, leadership, communication.
- 4.5 Threat and error management is explained and described in accordance with industry texts and standards.
- 4.6 A safety culture is identified and described in accordance with industry texts and standards.
- Range may include but is not limited to – safety reporting in aviation.

Outcome 5

Demonstrate knowledge of ergonomics in relation to flying in accordance with Subject No 34.

Performance criteria

- 5.1 Flight deck design is described and explained in accordance with industry texts and standards.
- Range may include but is not limited to – biomechanics, anthropometry.
- 5.2 Design of controls is explained in accordance with industry texts and standards.
- 5.3 Instrumentation, displays, and alerts are explained and described in accordance with industry texts and standards.
- 5.4 The rationale for the design of flight documents and the procedures for using them are explained and described in accordance with industry texts and standards.
- Range may include but is not limited to – normal checklists, emergency checklists; elements of an effective checklist – colour, size, font size; dangers of checklist complacency.

Outcome 6

Demonstrate knowledge of first aid and survival in accordance with Subject No 34.

Performance criteria

- 6.1 Basic principles of first aid are described in accordance with industry texts and standards.
- 6.2 Survival requirements are stated and explained in accordance with industry texts and standards.

Replacement information	This unit standard replaced unit standard 15361.
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This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	18 June 2010	31 December 2018
Revision	2	18 February 2011	31 December 2018
Review	3	20 October 2016	31 December 2027
Review	4	28 September 2023	31 December 2027

Consent and Moderation Requirements (CMR) reference	0169
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.