Title	**Demonstrate competence for multi-engine flight instruction**		
Level	**6**	**Credits**	**8**

Purpose	People credited with this unit standard are, for a flight instructor's multi-engine instruction privilege, able to: carry out pre-flight briefing instruction; carry out in-flight instruction; carry out post-flight debriefing instruction; instruct in the principles of flight; instruct in aircraft performance; instruct in aircraft systems; instruct in weight and balance; and demonstrate knowledge of CAA Rules and Advisory Circulars with respect to a multi-engine flight instructor's privilege.

Classification	Aviation > Aircraft Operation

Available grade	Achieved

Guidance Information

1 The flight covered by this unit standard must be demonstrated in accordance with the Civil Aviation Rules Part 61 and 91, and other relevant rules, published by the Civil Aviation Authority of New Zealand (CAA), PO Box 3555, Wellington 6140, and their subsequent amendments.

2 This unit standard is aligned with the relevant parts of the prescribed syllabi of the CAA, for a flight instructor's multi-engine privilege. Credit will be awarded on meeting the requirements of the CAA-approved assessment or examination.

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 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 multi-engine flight instructor rating, dependent on the Flight Instructor's Category.

Outcomes and performance criteria

Outcome 1

Carry out pre-flight briefing instruction for multi-engine aircraft.

Performance criteria

1.1 Pre-flight briefing instruction is carried out in accordance with industry texts and standards.

Range instruction includes but is not limited to – objectives, principles of flight and considerations, aircraft management, human factors, air exercise.

1.2 Ground instructional procedures are demonstrated in accordance with industry texts and standards.

Range procedures may include but are not limited to – pre-flight briefing delivery, questioning for understanding, use of teaching aids, blackboard and whiteboard technique.

Outcome 2

Carry out in-flight instruction for multi-engine aircraft.

Performance criteria

2.1 In-flight instructional procedures are demonstrated in accordance with industry texts and standards.

Range procedures include but are not limited to – demonstrate and patter, demonstrate normal and emergency procedures, monitor student practice, identify and correct student faults, maintain situational awareness.

Outcome 3

Carry out post-flight debriefing instruction for multi-engine aircraft.

Performance criteria

3.1 Post-flight debriefing instruction is carried out in accordance with industry texts and standards.

Range includes but is not limited to – encouraging student self critique, observations, anomalies, remedies, technique, evaluation, student records.

Outcome 4

Instruct in the principles of flight for multi-engine aircraft.

Performance criteria

4.1 Instruction in the principles of flight is demonstrated in accordance with industry texts and standards.

Range includes but is not limited to – mechanics, airflow, air resistance, lift and drag at subsonic speeds, thrust, level flight, climbing and performance, descending, manoeuvres, stability and control, asymmetry, forces and couples; use and misuse, and limits of rudder, ailerons and elevators; effect of IAS and thrust; residual unbalanced forces; definition, derivation and factors affecting minimum control speed; take-off safety speed; V_{SSE}, V_Y and V_{YSE}, V_X and V_{XSE}; one engine inoperative performance.

Outcome 5

Instruct in aircraft performance for multi-engine aircraft.

Performance criteria

5.1 Instruction in aerodrome geometry and take-off flight path is demonstrated in accordance with industry texts and standards.

Range includes but is not limited to – runway, stopway, clearway, take-off distance available, landing distance available.

5.2 Instruction in take-off speeds and their effects on aircraft is demonstrated in accordance with industry texts and standards.

Range includes but is not limited to – V_S, V_{MCA}, V_{YSE}, V_{XSE}; relationship between stalling speed and take-off safety speed; ability to interpret take-off data for a typical light multi-engine aircraft and to compute the take-off safety speed in compliance with the regulatory requirements in New Zealand.

5.3 Instruction in factors affecting take-off and landing distances, and their calculation and use is demonstrated in accordance with industry texts and standards.

Range factors include but are not limited to – effect of wind, effect of temperature, aircraft all-up weight, aerodrome pressure altitude and runway slope on the takeoff, landing distances; calculations include but are not limited to – ability to use graphs and tabulations for the purpose of calculating these distances, all-up weight limitation for an aircraft landing on a surface of fixed length, application of surface correction factors.

5.4 Instruction in factors affecting aircraft manoeuvring is demonstrated in accordance with industry texts and standards.

Range may include but is not limited to – V-g diagram, load factor, V_{no}, V_{NE}, V_A, effect of aeroplane manoeuvre on load factor, turbulence penetration airspeed.

Outcome 6

Instruct in aircraft systems for multi-engine aircraft.

Performance criteria

6.1 Instruction in aircraft systems is demonstrated in accordance with industry texts and standards.

Range includes but is not limited to – brake systems, hydraulic systems, fuel systems, electrical systems, variable pitch propellers, constant speed units, feathering, general principles and purpose of feathering, pilot checks and inspection systems, vacuum systems, fault finding and analysis, undercarriage, ground power, battery.

Outcome 7

Instruct in weight and balance for multi-engine aircraft.

Performance criteria

7.1 Instruction in the effects of weight and balance on aircraft is demonstrated in accordance with industry texts and standards.

Range includes but is not limited to – empty weight, zero fuel weight, useful load, maximum all-up weight, balance, centre of gravity, centre of gravity limits and the calculation of the position of the centre of gravity, movement of the centre of gravity due to change of load and fuel burn-off, use of index units.

Outcome 8

Demonstrate knowledge of CAA Rules and Advisory Circulars with respect to a multi-engine flight instructor's privilege.

Performance criteria

8.1 Privileges are explained in accordance with CAA Rules and Advisory Circulars.

Range includes but is not limited to – flight instruction, logbook certification.

8.2 Limitations are explained in accordance with CAA Rules and Advisory Circulars.

Range includes but is not limited to – type rating requirements.

Replacement information	This unit standard replaced unit standard 16327.

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
Review	2	20 October 2016	31 December 2027
Review	3	28 September 2023	31 December 2027

Consent and Moderation Requirements (CMR) reference	0169

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.