



Lufthansa Technical Training

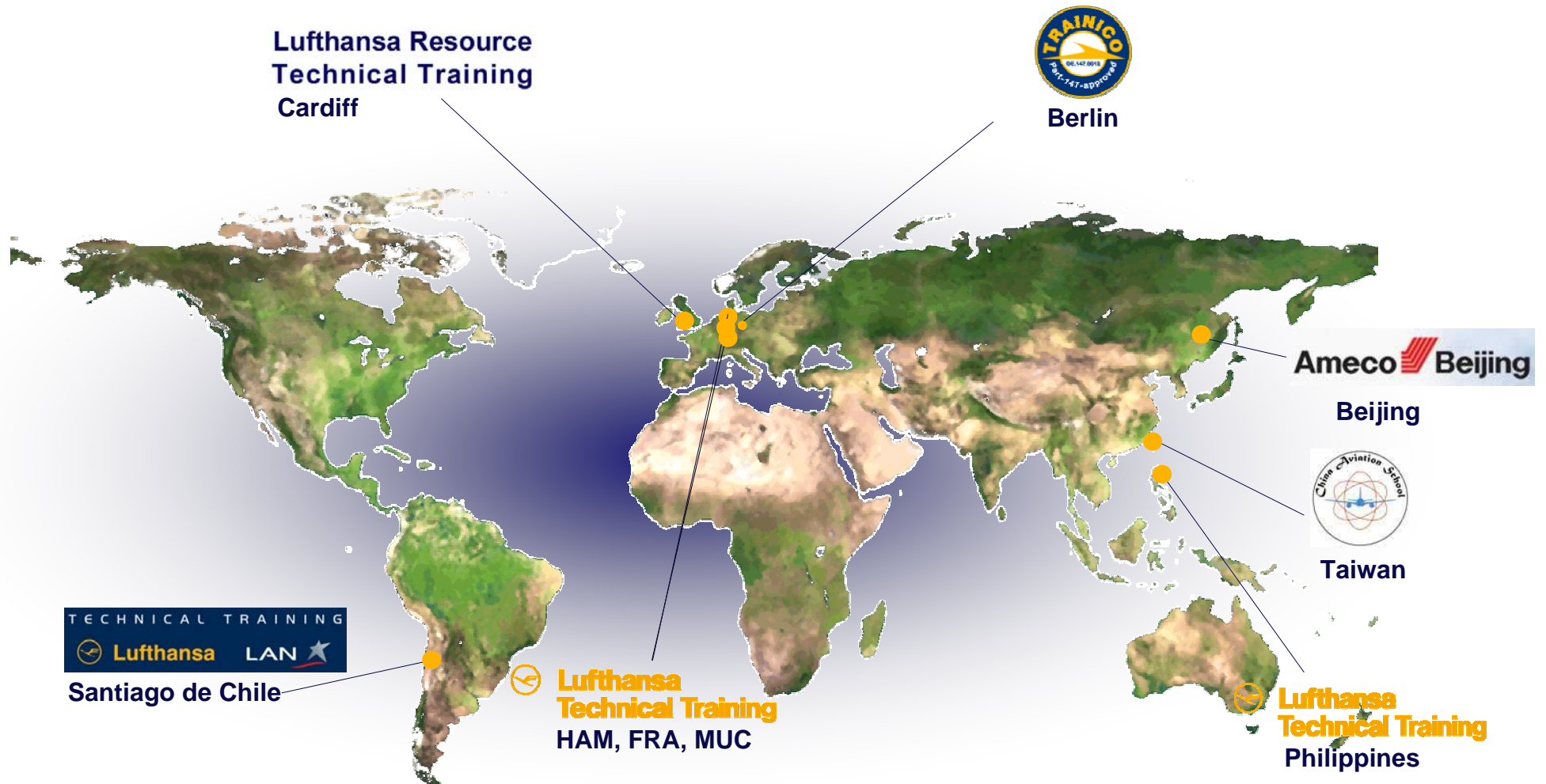


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EASA Industry Meeting 2006
Part-66 Category B2 Licensing Requirements

Lufthansa Technical Training

- Creating a global training network




Lufthansa Technical Training

Target Groups:

- Management
- Aviation Engineering
- Certifying Staff
- Aircraft Mechanics
- Service Personnel
- Beginner in aviation industry and on-the-job experienced staff

Scope of services:

- Basic Training
- Specialised Training
- Type Training
- Management Training
- Consulting Services
- Staffing Solutions



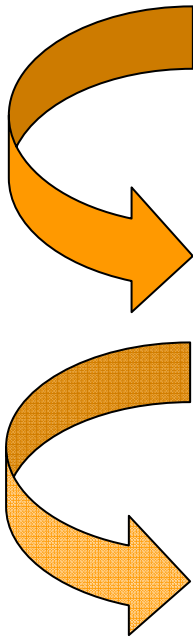
Category B2

Licensing Requirements according

Part-66 / Part-147



Legal requirements



Part-145

- 145.A.30 requires personnel, qualified i.a.w. Part-66 Cat. B1 and B2

Part-66

- 66.A.25 prescribes the basic knowledge requirements

Part-147

- 147.A.200 prescribes the duration of approved basic courses for Part-66 Categories B1 and B2

Part-66 Appendix 1 Basic Knowledge Requirements

2. MODULARISATION

Qualification on basic subjects for each Part-66 aircraft maintenance licence category or subcategory should be in accordance with the following matrix. Applicable subjects are indicated by an 'X':

Subject modules	A or B1 aeroplane with:		A or B1 helicopter with:		B2
	Turbine engine(s)	Piston engine(s)	Turbine engine(s)	Piston engine(s)	Avionics
1	X	X	X	X	X
2	X	X	X	X	X
3	X	X	X	X	X
4	X	X	X	X	X
5	X	X	X	X	X
6	X	X	X	X	X
7	X	X	X	X	X
8	X	X	X	X	X
9	X	X	X	X	X
10	X	X	X	X	X
11	X	X			
12			X	X	
13					X
14					X
15	X		X		
16		X		X	
17	X	X			

Subject Module Differences between B1 and B2

Following subject modules are not applicable for B2:

- M11, M15, M17

Following subject modules are different to B1:

- M4, M5, M6, M7

Following subject modules apply only to B2:

- M13, M14

Differences in Module 4

MODULE 4. ELECTRONIC FUNDAMENTALS			
	Level		
	A	B1	B2
4.1 Semiconductors			
4.1.1 Diodes			
(b)	—	—	2
4.1.2 Transistors			
(a)	—	1	2
(b)	—	—	2
4.1.3 Integrated Circuits			
(a)	—	1	—
(b)	—	—	2
4.2 Printed Circuit Boards	—	1	2
4.3 Servomechanisms			
(a)	—	1	—
(b)	—	—	2

Differences in Module 5

MODULE 5. DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS				
	Level			
	A	B1.1 B1.3	B1.2 B1.4	B2
5.1 Electronic Instrument Systems	1	2	2	3
5.2 Numbering Systems	—	1	—	2
5.3 Data Conversion	—	1	—	2
5.5 Logic Circuits				
(b)	—	—	—	2
5.6 Basic Computer Structure				
(a)	1	2	—	—
(b)	—	—	—	2
5.7 Microprocessors	—	—	—	2
5.8 Integrated Circuits	—	—	—	2
5.9 Multiplexing	—	—	—	2
5.10 Fibre Optics	—	1	1	2

Differences in Module 6

MODULE 6. MATERIALS AND HARDWARE			
	Level		
	A	B1	B2
6.1 Aircraft Materials — Ferrous			
(a)	1	2	1
6.2 Aircraft Materials — Non-Ferrous			
(a)	1	2	1
6.3 Aircraft Materials — Composite and Non-Metallic			
6.3.1 <i>Composite and non-metallic other than wood and fabric</i>			
(b)	1	2	—
6.3.2 <i>Wooden structures</i>	1	2	—
6.3.3 <i>Fabric covering</i>	1	2	—
6.4 Corrosion			
(b)	2	3	2
6.5 Fasteners			
6.5.4 <i>Aircraft rivets</i>	1	2	1
6.6 Pipes and Unions			
(b)	2	2	1
6.7 Springs	—	2	1
6.10 Control Cables	1	2	1

Differences in Module 7

MODULE 7. MAINTENANCE PRACTICES			
	Level		
	A	B1	B2
7.4 Avionic General Test Equipment	—	2	3
7.6 Fits and Clearances	1	2	1
7.8 Riveting	1	2	—
7.9 Pipes and Hoses	1	2	—
7.10 Springs	1	2	—
7.11 Bearings	1	2	—
7.12 Transmissions	1	2	—
7.13 Control Cables	1	2	—
7.14 Material handling			
7.14.1 Sheet Metal	—	2	—
7.14.2 Composite and non-metallic	—	2	—
7.15 Welding, Brazing, Soldering and Bonding			
(b)	—	2	—
7.16 Aircraft Weight and Balance			
(b)	—	2	—
7.18 Disassembly, Inspection, Repair and Assembly Techniques			
(a)	2	3	2
(b)	—	2	—
(c)	—	2	1
7.19 Abnormal Events			
(b)	2	2	—

Module 13 Overview

MODULE 13. AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS

	Level		
	A	B1	B2
13.1 Theory of Flight			
(a) <i>Aeroplane Aerodynamics and Flight Controls</i>	—	—	1
(b) <i>High Speed Flight</i>	—	—	1
(c) <i>Rotary Wing Aerodynamics</i>	—	—	1
13.2 Structures — General Concepts			
(a)	—	—	1
(b)	—	—	2
13.3 Autoflight (ATA 22)	—	—	3
13.4 Communication/Navigation (ATA 23/34)	—	—	3
13.5 Electrical Power (ATA 24)	—	—	3
13.6 Equipment and Furnishings (ATA 25)	—	—	3
Flight Controls (ATA 27)			
(a)	—	—	1
(b)	—	—	2
13.8 Instrument Systems (ATA 31)	—	—	2
13.9 Lights (ATA 33)	—	—	3
13.10 On board Maintenance Systems (ATA 45)	—	—	2

Module 14 Overview

MODULE 14 PROPULSION

	Level		
	A	B1	B2
14.1 Turbine Engines			
(a)	—	—	1
(b)	—	—	2
14.2 Engine Indicating Systems	—	—	2

Part-147 Appendix 1 Basic Training Course Duration

Appendix I

Basic Training Course Duration

Minimum duration of complete basic courses

Basic Course	Duration (in hours)	Theoretical training ratio (in %)
A1	800	30 to 35
A2	650	30 to 35
A3	800	30 to 35
A4	800	30 to 35
B1.1	2 400	50 to 60
B1.2	2 000	50 to 60
B1.3	2 400	50 to 60
B1.4	2 400	50 to 60
B2	2 400	50 to 60

Basic Training Course Duration

Cat. B1 full basic training course:
424 training days

Cat. B2 full basic training course:

- In compliance with Part-147: 424 training days
- Related to Cat. B1 training course: About 320 training days

To be compliant, two possibilities:

1. Extend all modules to reach the required 2400 training hours, or
2. Elaborate only on the exclusive Cat. B2 modules

LBA-approved
basic training
courses:

Category B1.1 full basic course

Modul	Bezeichnung	Tage
1	Mathematik	7
2	Physik	20
3	Grundlagen der Elektrik	20
4	Grundlagen der Elektronik	3
5	Digitaltechniken und Elektronische Instrumentensysteme	10
6/7	Werkstoffe und Komponenten / Instandhaltung	187
8	Grundlagen der Aerodynamik	9
9	Menschliches Leistungsvermögen	4
10	Luftrecht	6
11	Aerodynamik, Struktur und Systeme von Flugzeugen – Zelle	47
11	Aerodynamik, Struktur und Systeme von Flugzeugen – Bordsysteme	26
11	Aerodynamik, Struktur und Systeme von Flugzeugen – Stromversorgung	21
11	Aerodynamik, Struktur und Systeme von Flugzeugen – Avionik	16
15	Gasturbinentriebwerke	43
17	Propeller	5
Gesamt		424

Category B2 full basic course

Modul	Bezeichnung	Tage
1	Mathematik	7
2	Physik	20
3	Grundlagen der Elektrik	30
4	Grundlagen der Elektronik	20
5	Digitaltechniken und Elektronische Instrumentensysteme	37
6/7	Werkstoffe und Komponenten / Instandhaltung	122
8	Grundlagen der Aerodynamik	9
9	Menschliches Leistungsvermögen	4
10	Luftrecht	6
13	Aerodynamik, Struktur und Systeme von Flugzeugen – Bordsysteme	49
13	Aerodynamik, Struktur und Systeme von Flugzeugen – Bordelektrik	21
13	Aerodynamik, Struktur und Systeme von Flugzeugen – Instrumente	26
13	Aerodynamik, Struktur und Systeme von Flugzeugen – Com / Nav	29
13	Aerodynamik, Struktur und Systeme von Flugzeugen – AFI	33
14	Antrieb	11
Gesamt		424

Module 13: No chance for NAAs?

49 days

33 days

29 days

21 days

26 days

MODULE 13. AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS

	Level		
	A	B1	B2
13.1 Theory of Flight			
(a) Aeroplane Aerodynamics and Flight Controls	—	—	1
(b) High Speed Flight	—	—	1
(c) Rotary Wing Aerodynamics	—	—	1
13.2 Structures — General Concepts			
(a)	—	—	1
(b)	—	—	2
13.3 Autoflight (ATA 22)	—	—	3
13.4 Communication/Navigation (ATA 23/34)	—	—	3
13.5 Electrical Power (ATA 24)	—	—	3
13.6 Equipment and Furnishings (ATA 25)	—	—	3
Flight Controls (ATA 27)			
(a)	—	—	1
(b)	—	—	2
13.8 Instrument Systems (ATA 31)	—	—	2
13.9 Lights (ATA 33)	—	—	3
13.10 On board Maintenance Systems (ATA 45)	—	—	2

For Comparison only: Module 11 Examples

47 days

	Level		
	A1	B1.1	B2
11.1 Theory of Flight		2/3	
11.2 Airframe Structures — General Concepts			
11.3 Airframe Structures — Aeroplanes			
11.4 Air Conditioning and Cabin Pressurisation (ATA 21)			
11.7 Equipment and Furnishings (ATA 25)			
11.10 Fuel Systems (ATA 28)	1	3	—
11.15 Oxygen (ATA 35)	1	3	—
11.16 Pneumatic/Vacuum (ATA 36)	1	3	—
11.17 Water/Waste (ATA 38)	2	3	—

21 days

11.6 Electrical Power (ATA 24)	1	3	—
11.8 Fire Protection (ATA 26)	1	3	—
11.12 Ice and Rain Protection (ATA 30)	1	3	—
11.14 Lights (ATA 33)	2	3	—
11.18 On Board Maintenance Systems (ATA 45)	1	2	—

26 days

11.9 Flight Controls (ATA 27)	1	3	—
11.11 Hydraulic Power (ATA 29)	1	3	—
11.13 Landing Gear (ATA 32)	2	3	—

... and Category A?

B2 does not include mechanical issues

⇒ Extension to Category A needs additional training:

⇒ About 75 hours (equivalent 13 training days)

Proposal

- Adjust Part-66 Appendix 1 (basic knowledge)
- Include Category A into B2
- Adjust Part-147 Appendix 1 (training hours)

Thank you for your attention.

