

# **RAPPORT VAN EXAMENVRIJSTELLINGEN VLIEGTUIGTECHNIEKEN**

**3<sup>de</sup> graad tso  
1<sup>ste</sup> & 2<sup>de</sup> leerjaar**

Dit rapport van examenvrijstelling ondersteunt de aanvraag voor vrijstellingen van de technische kwalificatie 'VLIEGTUIGTECHNIEKER'

Vrijstellingsrapport: **NAAM SCHOOL** VTTK-312 versie 001



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## Rapport examenvrijstelling Vliegtuigtechnieken

School: **VVKSO – OSVG**

Datum opmaak: 25 januari 2009

Documentnummer: **NAAM SCHOOL** VTTK- 312 Versie:001

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### 1 School

**School:**

**Adres:**

**Tel:**

**Fax:**

**mailadres**

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## 2 Versie controle

Referentie	Opmerkingen	Verantwoordelijke uitgever	Datum van uitgifte
Rapport van ex vrijstellingen <b>Naam school</b> VTTK-312 versie 001			

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### 3 Kopie Controle

Referentie	Bestemming	Verantwoordelijke uitgever	Datum van uitgife
<b>Naam school</b>			
VTTK-312 versie 001			

## 4 Lijst van effectieve pagina's

blz	herziening	datum	blz	herziening	datum
1	origineel	25/01/2009	44	origineel	25/01/2009
2	origineel	25/01/2009	45	origineel	"
3	origineel	25/01/2009	46	origineel	"
4	origineel	25/01/2009	47	origineel	"
5	origineel	25/01/2009	48	origineel	"
6	origineel	25/01/2009	49	origineel	"
7	origineel	25/01/2009	50	origineel	"
8	origineel	25/01/2009	51	origineel	"
9	origineel	25/01/2009	52	origineel	"
10	origineel	25/01/2009	53	origineel	"
11	origineel	25/01/2009	54	origineel	"
12	origineel	25/01/2009	55	origineel	"
13	origineel	25/01/2009	56	origineel	"
14	origineel	25/01/2009	57	origineel	"
15	origineel	"	58	origineel	"
16	origineel	"	59	origineel	"
17	origineel	"	60	origineel	"
18	origineel	"	61	origineel	"
19	origineel	"	62	origineel	"
20	origineel	"	63	origineel	"
21	origineel	"	64	origineel	"
22	origineel	"	65	origineel	"
23	origineel	"	66	origineel	"
24	origineel	"	67	origineel	"
25	origineel	"	68	origineel	"
26	origineel	"	69	origineel	"
27	origineel	"	70	origineel	"
25	origineel	"	71	origineel	"
29	origineel	"	72	origineel	"
30	origineel	"	73	origineel	"
31	origineel	"	74	origineel	"
32	origineel	"	75	origineel	"
33	origineel	"	76	origineel	25/01/2009
34	origineel	"			
35	origineel	"			
36	origineel	"			
37	origineel	"			
38	origineel	"			
39	origineel	"			
40	origineel	"			
41	origineel	"			
42	origineel	"			
43	origineel	"			



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Vorbereid door:

Nagekeken door:

Toegestaan door:

Goedgekeurd door:

Directeur

DLV

DLV

## **5 INLEIDING**

### **5.1 Algemeen**

In het **naam van de school** wordt ondermeer de derde graad tso Vliegtuigtechnieken georganiseerd. Dit leerplan omvat een aantal modules conform de vereisten van de PART-66-reglementering van het Europese Agentschap voor Luchtvaartveiligheid (EASA).

### **5.2 Doelstelling**

Dit document moet het Directoraat-generaal Luchtvaart in staat stellen te oordelen over het georganiseerd onderwijs om zodoende een aantal vrijstellingen te kunnen verlenen voor een bewijs van onderhoudsbevoegdheid.

Dit rapport van examenvrijstellingen werd opgemaakt voor de categorieën A1,A2, A3, A4,B1.1, B1.2, B1.3, B1.4.

De volgende modules, 4 – 5 – 9 – 10 – 12 – 13 – 14 – 16 – 17 werden in dit rapport van vrijstellingen niet opgenomen en hiervoor is tevens geen gelijkwaardige norm voorzien vermits deze modules in deze opleiding niet worden aangeboden.

## 6 Verklaring van naleving

### 6.1 Leerplan

Referentie

- Leerplan Vliegtuigtechnieken derde graad tso
  - Leerplannummer door de school in te vullen
- Leerplan Wiskunde
  - Leerplannummer door de school in te vullen

### 6.2 Verklaring van naleving

Als algemeen Directeur verbind ik me ertoe:

- de minimale leerinhouden en de doelstellingen af te stemmen op de na te streven licenties overeenkomstig de PART-66-regelgevingen in de vier categorieën:
  - A1: Grote vliegtuigen (turbines)
  - A2: Kleine vliegtuigen (zuigermotoren)
  - A3: Helikopters (turbines)
  - A4: Helikopters (zuigermotoren)
- In al deze categorieën streven we het “**level**” na zoals in de PART-66 reglementering duidelijk omschreven is.
- Daarnaast streven we om het B1 niveau te behalen in enkele modules/deelmodules.
- Om de vrije toegang tot de leslokalen en de installaties van de school (en het VLOC) te verlenen voor afgevaardigden van de overheid zodat die toezicht kunnen houden.
- Om de onderliggende voorschriften na te leven en te doen naleven.

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**6.3 Module 1 MATHEMATICS**

Technical qualification:							
Module 1 MATHEMATICS		Level					
Sub module	Subject	Equivalent standard					
			<table border="1"> <tr> <td>Familiarisation</td> <td>General knowledge</td> <td>Detailed knowledge</td> <td>No equivalent standard</td> </tr> </table>	Familiarisation	General knowledge	Detailed knowledge	No equivalent standard
Familiarisation	General knowledge	Detailed knowledge	No equivalent standard				
1.1 Arithmetic	Arithmetical terms and signs, methods of multiplication and division, fractions and decimals, factors and multiples, weights, measures and conversion factors, ratio and proportion, averages and percentages, areas and volumes, squares, cubes, square and cube roots.	Handboek: JEWEKA ISBN: 978-90-78206-27-9 Wiskunde Hoofdstuk 1 Rekenkunde Hoofdstuk 3 Meetkunde	<table border="1"> <tr> <td><input type="checkbox"/></td> <td><b>X</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>				

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1.2 (a) Algebra	Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions;	Handboek: JEWEKA ISBN: 978-90-78206-27-9 Wiskunde Hoofdstuk 1 Rekenkunde Hoofdstuk 2 Algebra	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
1.2 (b) Algebra	Linear equations and their solutions;	Handboek: JEWEKA ISBN: 978-90-78206-27-9 Wiskunde Hoofdstuk 2 Algebra	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Indices and powers, negative and fractional indices;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Binary and other applicable numbering systems;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Simultaneous equations and second degree equations with one unknown;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Logarithms;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 (a) Geometry	Simple geometrical constructions;	Handboek: JEWEKA ISBN: 978-90-78206-27-9 Wiskunde Hoofdstuk 3 Meetkunde	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 (b) Geometry	Graphical representation; nature and uses of graphs, graphs of equations/functions;	Handboek: JEWEKA ISBN: 978-90-78206-27-9 Wiskunde Hoofdstuk 2 Algebra	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
1.3 (c) Geometry	Simple trigonometry; trigonometrical relationships, use of tables and rectangular and polar coordinates.	Handboek: JEWEKA ISBN: 978-90-78206-27-9 Wiskunde Hoofdstuk 2 Algebra Hoofdstuk 3 Meetkunde	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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### 6.4 Module 2 PHYSICS

Technical qualification:						
Module 2 PHYSICS		Level				
Sub module	Subject	Equivalent standard	Familiarisation	General knowledge	Detailed knowledge	No equivalent standard
2.1 Matter	Nature of matter: the chemical elements, structure of atoms, molecules;	Leerplandoelstelling nr 1 & 2	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Chemical compounds.	Handboek: JEWEKA	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	States: solid, liquid and gaseous;	ISBN-13 978-90-78206-04-0	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Changes between states.	Natuurkunde voor vliegtuigonderhoud Deel 1 Hoofdstuk 5 Materie	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2.2.1 Mechanics	Forces, moments and couples, representation as vectors;	Leerplandoelstelling nr 3 – 4 – 5 – 6 – 7	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Centre of gravity.	Handboek: JEWEKA	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Elements of theory of stress, strain and elasticity: tension, compression, shear and torsion;	ISBN-13 978-90-78206-04-0	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Nature and properties of solid, fluid and gas;	Natuurkunde voor vliegtuigonderhoud Deel 1	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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	Pressure and buoyancy in liquids (barometers).	Hoofdstuk 3 Kracht en beweging Hoofdstuk 4 Kracht en evenwicht Hoofdstuk 7 Druk	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
2.2.2 Mechanics	Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity);	Leerplandoelstelling nr 8	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Rotational movement: uniform circular motion (centrifugal/centripetal forces);	Handboek: JEWEKA ISBN-13 978-90-78206-04-0	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Periodic motion: pendular movement;	Natuurkunde voor vliegtuigonderhoud Deel 1	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Simple theory of vibration, harmonics and resonance;	Hoofdstuk 1 Beweging langs rechte lijn	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Velocity ratio, mechanical advantage and efficiency.	Hoofdstuk 2 De cirkelvormige en periodieke bewegingen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
2.2.3 (a) Dynamics	Mass	Leerplandoelstelling nr 9 - 10	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency;	Handboek: JEWEKA ISBN-13 978-90-78206-04-0 Natuurkunde voor vliegtuigonderhoud Deel 1 Hoofdstuk 1 Beweging langs rechte lijn Hoofdstuk 2 De cirkelvormige en periodieke bewegingen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
2.2.3 (b) Dynamics	Momentum, conservation of momentum;	Leerplandoelstelling nr 11 – 13	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Impulse;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Gyroscopic principles;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Friction: nature and effects, coefficient of friction (rolling resistance).		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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2.2.4 (a) Fluid dynamics	Specific gravity and density;	Leerplandoelstelling nr 14  Handboek: JEWEKA ISBN-13 978-90-78206-04-0 Natuurkunde voor vliegtuigonderhoud Deel 1 Hoofdstuk 5 Materie Hoofdstuk 8 Stromingsleer	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
2.2.4 (b) Fluid dynamics	Viscosity, fluid resistance, effects of streamlining;	Leerplandoelstelling nr 15	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Effects of compressibility on fluids;	Handboek: JEWEKA	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Static, dynamic and total pressure: Bernoulli's Theorem, venturi.	Natuurkunde voor vliegtuigonderhoud Deel 1 ISBN-13 978-90-78206-04-0 Hoofdstuk 5 Materie Hoofdstuk 8 Stromingsleer	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
2.3 (a) Thermodynamics	Temperature: thermometers and temperature scales: Celsius, Fahrenheit and Kelvin; Heat definition.	Leerplandoelstelling nr 16  Handboek: JEWEKA ISBN-13 978-90-78206-04-0 Natuurkunde voor vliegtuigonderhoud Deel 1 Hoofdstuk 6 Energie en arbeid  Handboek: JEWEKA ISBN-13:978-90-78206-18-7 Natuurkunde voor vliegtuigonderhoud Deel 2 Hoofdstuk 1 Warmte	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
2.3 (b) Thermodynamics	Heat capacity, specific heat;	Leerplandoelstelling nr 17 – 18	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Heat transfer: convection, radiation and conduction;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>



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	Volumetric expansion;	Handboek: JEWEKA ISBN-13:978-90-78206-18-7 Natuurkunde voor vliegtuigonderhoud Deel 2 Hoofdstuk 2 Thermodynamica	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	First and second law of thermodynamics;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Gases: ideal gases laws; specific heat at constant volume and constant pressure, work done by expanding gas;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Isothermal, adiabatic expansion and compression, engine cycles, constant volume and constant pressure, refrigerators and heat pumps;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Latent heats of fusion and evaporation, thermal energy, heat of combustion.		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
2.4 Optics (light)	Nature of light; speed of light;	Leerplandoelstelling nr 19	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, refraction, lenses;	Handboek: JEWEKA ISBN-13:978-90-78206-18-7 Natuurkunde voor vliegtuigonderhoud Deel 2 Hoofdstuk 4 optica	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Fibre optics.		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
2.5 Wave motion and sound	Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves;	Leerplandoelstelling nr 20	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect.	Handboek: JEWEKA ISBN-13:978-90-78206-18-7 Natuurkunde voor vliegtuigonderhoud Deel 2 Hoofdstuk 3 Golfverschijnselen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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### 6.5 Module 3 ELECTRICAL FUNDAMENTALS

Technical qualification:						
Module 3 ELECTRICAL FUNDAMENTALS					Level	
Sub module	Subject	Equivalent standard	Familiarisation	General knowledge	Detailed knowledge	No equivalent standard
3.1 Electron Theory	Structure and distribution of electrical charges within: atoms, molecules, ions, compounds;	Leerplandoelstelling nr 21 – 22	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Molecular structure of conductors, semiconductors and insulators.	Handboek: JEWEKA ISBN-13:978-90-78206-29-3 Elektriciteitsleer I Deel 1 Hoofdstuk 1 Elektronentheorie	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.2 Static Electricity and Conduction	Static electricity and distribution of electrostatic charges;	Leerplandoelstelling nr 23 – 25	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Electrostatic laws of attraction and repulsion;	Handboek: JEWEKA ISBN-13:978-90-78206-29-3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Units of charge, Coulomb's Law;		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	Conduction of electricity in solids, liquids, gases and a vacuum.	Elektriciteitsleer I Deel 1 Hoofdstuk 2 Statische elektriciteit en geleiding	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
3.3 Electrical Terminology	The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.	Leerplandoelstelling nr 26  Handboek: JEWEKA ISBN-13:978-90-78206-29-3 Elektriciteitsleer I Deel 1 Hoofdstuk 3 Begrippen uit de elektriciteitsleer	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
3.4 Generation of Electricity	Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion.	Leerplandoelstelling nr 27  Handboek: JEWEKA ISBN-13:978-90-78206-29-3 Elektriciteitsleer I Deel 1 Hoofdstuk 4 Opwekking van elektriciteit	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
3.5 DC Sources of Electricity	Construction and basic chemical action of: primary cells, secondary cells, lead acid cells, nickel cadmium cells, other alkaline cells;	Leerplandoelstelling nr 28 – 31	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Cells connected in series and parallel;	Handboek: JEWEKA ISBN-13:978-90-78206-29-3	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Internal resistance and its effect on a battery;	Elektriciteitsleer I Deel 1	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Construction, materials and operation of thermocouples;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Operation of photo-cells.	Hoofdstuk 5 Gelijkstroombronnen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
3.6 DC Circuits	Ohms Law, Kirchoff's Voltage and Current Laws;	Leerplandoelstelling nr 32 – 33	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Calculations using the above laws to find resistance, voltage and current;	Handboek: JEWEKA	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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	Significance of the internal resistance of a supply.	ISBN-13:978-90-78206-29-3 Elektriciteitsleer I Deel 1 Hoofdstuk 6 Gelijkspanningscircuits	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.7(a) Resistance/Resistor	Resistance and affecting factors;	Leerplandoelstelling nr 34 – 40	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Specific resistance;	Handboek: JEWEKA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Resistor colour code, values and tolerances, preferred values, wattage ratings;	ISBN-13:978-90-78206-29-3 Elektriciteitsleer I	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Resistors in series and parallel;	Deel 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Calculation of total resistance using series, parallel and series parallel combinations;	Hoofdstuk 7 Weerstand en weerstanden	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Operation and use of potentiometers and rheostats;		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Operation of Wheatstone Bridge.		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.7(b) Resistance/Resistor	Positive and negative temperature coefficient conductance;	Leerplandoelstelling nr 41 – 42	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fixed resistors, stability, tolerance and limitations, methods of construction;	Handboek: JEWEKA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Variable resistors, thermistors, voltage dependent resistors;	ISBN-13:978-90-78206-29-3 Elektriciteitsleer I	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Construction of potentiometers and rheostats;	Deel 1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Construction of Wheatstone Bridge;	Hoofdstuk 7 Weerstand en weerstanden	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.8 Power	Power, work and energy (kinetic and potential)	Leerplandoelstelling nr 43 – 44	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Dissipation of power by a resistor	Handboek: JEWEKA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Power formula	ISBN-13:978-90-78206-29-3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	Calculations involving power, work and energy	Elektriciteitsleer I Deel 1 Hoofdstuk 8 Vermogen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
3.9 Capacitance / Capacitor	Operation and function of a capacitor	Leerplandoelstelling nr 45 – 47	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Factors affecting capacitance: area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating	Handboek: JEWEKA ISBN-13:978-90-78206-29-3	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Capacitor types, construction and function	Elektriciteitsleer I Deel 1	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Capacitor colour coding	Hoofdstuk 9 Elektrische capaciteit en condensator	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Calculations of capacitance and voltage in series and parallel circuits		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Exponential charge and discharge of a capacitor, time constants		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Testing of capacitors		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
3.10(a) Magnetism	Theory of magnetism	Leerplandoelstelling nr 48 – 50	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Properties of a magnet	Handboek: JEWEKA ISBN-13:978-90-78206-29-3	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Action of a magnet suspended in the Earth's magnetic field	Elektriciteitsleer I Deel 1	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Magnetisation and demagnetisation	Hoofdstuk 10 Magnetisme	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Magnetic shielding		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Various types of magnetic material		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Electromagnets construction and principles of operation		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Hand clasp rules to determine: magnetic field around current carrying conductor		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
3.10(b) Magnetism	Magnetomotive force Field strength, magnetic flux density Permeability Hysteresis loop Retentivity Coercive force reluctance Saturation point Eddy currents	Leerplandoelstelling nr 51  Handboek: JEWEKA	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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	Precautions for care and storage of magnets	ISBN-13:978-90-78206-29-3 Elektriciteitsleer I Deel 1 Hoofdstuk 10 Magnetisme	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.11 Induc- tance/Inductor	Faraday's Law	Leerplandoelstelling nr 52	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Action of inducing a voltage in a conductor moving in a magnetic field	Handboek: JEWeka ISBN-13:978-90-78206-15-2 Elektriciteitsleer II Deel 2 Hoofdstuk 1 Inductie	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Induction principles		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Effects of the following on the magnitude of an induced voltage: mag- netic field strength, rate of change of flux, number of conductor turns		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Mutual induction		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	The effect the rate of change of primary current and mutual inductance has on induced voltage		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Lenz's Law and polarity determining rules		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Back emf, self induction		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Saturation point		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Principal uses of inductors	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
3.12 DC mo- tor/Generator theory	Basic motor and generator theory	Leerplandoelstelling nr 53	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Construction and purpose of components in DC generator	Handboek: JEWeka ISBN-13:978-90-78206-15-2 Elektriciteitsleer II Deel 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Operation of, and factors affecting output and direction of current flow in DC generators		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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	Series wound, shunt wound and compound motors	Hoofdstuk 2 DC-generatoren	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Starter Generator construction	Hoofdstuk 3 DC-motoren	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.13 AC theory	Sinusoidal waveform: phase, period, frequency, cycle	Leerplandoelstelling nr 54 – 56	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power	Handboek: JEWEKA Elektriciteitsleer I	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Triangular/Square waves	Deel 1 ISBN-13:978-90-78206-29-3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Single / 3 phase principles	Hoofdstuk 11 Wisselstroomtheorie  ISBN-13:978-90-78206-15-2 Elektriciteitsleer II Deel 2 Hoofdstuk 4 Wisselstroomtheorie	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3.14 Resistive (R), Capacitive (C) and Inductive (L) circuit	Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel	Leerplandoelstelling nr 57	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Power dissipation in L, C and R circuits	Handboek: JEWEKA ISBN-13:978-90-78206-15-2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Impedance, phase angle, power factor and current calculations	Elektriciteitsleer II	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	True power, apparent power and reactive power calculations	Deel 2 Hoofdstuk 5 R, C en L-circuits op wisselspanning	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.15 Transformers	Transformer construction principles and operation	Leerplandoelstelling nr 58	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Transformer losses and methods for overcoming them	Handboek: JEWEKA	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Transformer action under load and no-load conditions	ISBN-13:978-90-78206-15-2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Power transfer, efficiency, polarity markings	Elektriciteitsleer II	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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	Calculation of line and phase voltages and currents	Deel 2				<b>X</b>
	Calculation of power in a three phase system	Hoofdstuk 6 Transformatoren				<b>X</b>
	Primary and Secondary current, voltage, turns ratio, power, efficiency		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Auto transformers		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
3.16 Filters	Operation, application and uses of the following filters: low pass, high pass, band pass, band stop.	Leerplandoelstelling nr 59  Handboek: JEWEKA ISBN-13:978-90-78206-15-2 Elektriciteitsleer II Deel 2 Hoofdstuk 7 Filters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
3.17 AC Generators	Rotation of loop in a magnetic field and waveform produced	Leerplandoelstelling nr 60	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Operation and construction of revolving armature and revolving field type AC generators	Handboek: JEWEKA ISBN-13:978-90-78206-15-2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Single phase, two phase and three phase alternators	Elektriciteitsleer II	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Three phase star and delta connections advantages and uses	Deel 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Permanent Magnet Generators	Hoofdstuk 8 AC-generators	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
3.18 AC Motors	Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and polyphase	Leerplandoelstelling nr 61	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Methods of speed control and direction of rotation	Handboek: JEWEKA ISBN-13:978-90-78206-15-2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Methods of producing a rotating field: capacitor, inductor, shaded or split pole	Elektriciteitsleer II Deel 2 Hoofdstuk 9 AC-motoren	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>



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4.2 Printed circuit boards	Description and use of printed circuit boards.		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
4.3(a) Servomechanisms	Understanding of the following terms: Open and closed loop systems, feedback, follow up, analogue transducers		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Principles of operation and use of the following synchro system components / features: resolvers differential control and torque transformers inductance and capacitance transmitters, synchronous transmitters		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
4.3(b) Servomechanisms	Understanding of the following terms: Open and closed loop, follow up, servomechanism, analogue transducer, null damping, feedback, deadband		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Construction operation and use of the following synchro system components: resolvers, differential, control and torque, E and I transformers, inductance transmitters, capacitance transmitters, synchronous transmitters		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Servomechanism defects, reversal of synchro leads, hunting		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>

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**6.6 Module 6 MATERIALS AND HARDWARE**

Technical qualification:				Level			
Module 6 MATERIALS AND HARDWARE							
Sub module	Subject	Equivalent standard	Familiarisation	General knowledge	Detailed knowledge	No equivalent standard	
6.1(a) Aircraft materials - Ferrous	Characteristics, properties and identification of common alloy steels used in aircraft	Leerplandoelstelling nr 62 – 64	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
	Heat treatment and application of alloys steels	Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 1 Materiaaleigenschappen Hoofdstuk 2 Vliegtuigmaterialen ijzerhoudend	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
6.1(b) Aircraft materials - Ferrous	Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance	Leerplandoelstelling nr 65  Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 4 Destructief onderzoek	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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6.2(a) Aircraft materials – Non-Ferrous	Characteristics, properties and identification of common non-ferrous materials used in aircraft	Leerplandoelstelling nr 66 – 68	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Heat treatment and application of non-ferrous materials	Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 1 Materiaaleigenschappen Hoofdstuk 3 Vliegtuigmaterialen niet-ijzerhoudend	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.2(b) Aircraft materials – Non-Ferrous	Testing of non-ferrous material for hardness tensile strength, fatigue strength and impact resistance	Leerplandoelstelling nr 69  Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 4 Destructief onderzoek	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.3.1(a) Aircraft materials – Composite and non-metallic	Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft	Leerplandoelstelling nr 70 – 72	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Sealants and bonding agents	Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 5 Vliegtuigmaterialen – composieten en niet metalen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
6.3.1(b) Aircraft ma-	The detection of defects in composite and non-metallic material	Leerplandoelstelling nr 73 – 75	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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terials – Composite and non-metallic	Repair of composite and non-metallic material	Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 1 Materiaaleigenschappen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.3.2 Aircraft materials – Composite and non-metallic	Construction methods of wooden airframe structures	Leerplandoelstelling nr 76 – 79	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Characterisitcs, properties and types of wood and glue used in aeroplanes	Handboek: JEWEKA ISBN-13:978-90-8044336-9-4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Preservation and maintenance of wooden structures	Materialen en hardware	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Type of defects in wood material and wooden structures	Hoofdstuk 5 Vliegtuigmaterialen – composieten en niet metalen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	The detection of defects in wooden structure		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Repair of wooden structure		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.3.3 Aircraft materials – Composite and non-metallic	Characterisitcs, properties and types of fabrics used in aeroplanes	Leerplandoelstelling nr 80 – 82	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Inspection methods for fabrics		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Type of defects in fabrics	Handboek: JEWEKA ISBN-13:978-90-8044336-9-4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Repair of fabric covering	Materialen en hardware Hoofdstuk 5 Vliegtuigmaterialen – composieten en niet metalen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4(a) Corrosion	Chemical fundamentals	Leerplandoelstelling nr 83 – 85	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Formation by galvanic action process, microbiological, stress	Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 6 Corrosie	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.4(b) Corrosion	Types of corrosion and their identification	Leerplandoelstelling nr 86 – 87	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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	Causes of corrosion		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Material types, susceptibility to corrosion	Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 6 Corrosie	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>6.5. Fasteners</b>						
6.5.1 Fasteners Screw theards	Screw nomenclature	Leerplandoelstelling nr 88 – 90	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Thread forms, dimensions and tolerances for standard threads used in aircraft	Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Measuring screw threads	Hoofdstuk 7 Verbindingsmiddelen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.5.2 Fasteners  Bolts, studs and screws	Bolt types: specification, identification and marking of aircraft bolts, international standards	Leerplandoelstelling nr 91 – 93	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Nuts: self locking, anchor, standard types	Handboek: JEWEKA ISBN-13:978-90-8044336-9-4	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Machine screws: aircraft specifications	Materialen en hardware	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Studs: types and uses, insertion and removal	Hoofdstuk 7 Verbindingsmiddelen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Self tapping screws, Dowels		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6.5.3 Fasteners Locking devices	Tab and spring washers, Locking plates, Split pins, Pal-nuts, Wire locking, Quick release fasteners, Keys Circlips, Cotter pins	Leerplandoelstelling nr 94 – 95  Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 7 Verbindingsmiddelen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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6.5.4 Fasteners Aircrafts rivits	Types of solid and blind rivets: specifications and identification, heat treatment	Leerplandoelstelling nr 96 – 98  Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 7 Verbindingsmiddelen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
6.6(a) Pipes and unions	Identification of, and types of rigid and flexible pipes used in aircraft	Leerplandoelstelling nr 99  Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 8 Leidingen en koppelstukken	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
6.6(b) Pipes and unions	Standard unions for aircraft hydraulic, fuel, oil, pneumatic, air system pipes	Leerplandoelstelling nr 100  Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 8 Leidingen en koppelstukken	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
6.7 Springs	Types of springs, Materials, Characteristics and Applications	Leerplandoelstelling nr 101  Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 9 Veren	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
6.8 Bearings	Purpose of bearings, loads, Materials, construction	Leerplandoelstelling nr 102 – 104	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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	Types of bearings and their application	Handboek: JEWEKA ISBN-13:978-90-8044336-9-4 Materialen en hardware Hoofdstuk 10 Lagers	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
6.9 Transmissions	Gear types and their application	Leerplandoelstelling nr 105 – 107	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Gear ratios, reduction and multiplication gear systems, Driven and driving gears, Idler gears, Mesh patterns	Handboek: JEWEKA ISBN-13:978-90-8044336-9-4	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Belts and pulleys, Chains and sprockets	Materialen en hardware Hoofdstuk 11 Tanwielen, Riemen en kettingen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
6.10 Control cables	Types of cables	Leerplandoelstelling nr 108	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	End fittings, turnbuckles and compensation devices	Handboek: JEWEKA	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Pulleys and cable system components	ISBN-13:978-90-8044336-9-4	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Bowden cables	Materialen en hardware	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Aircraft flexible control systems	Hoofdstuk 12 Bedieningskabels	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
6.11 Electrical cables and connectors	Cable types, construction and characteristics	Leerplandoelstelling nr 109 – 111	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	High tension cables and Co-axial cables	Handboek: JEWEKA	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Crimping	ISBN-13:978-90-8044336-9-4	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Connector types, pins, plugs, sockets, insulators current and voltage rating, coupling, identification codes	Materialen en hardware Hoofdstuk 13 Elektrische kabels en connectors	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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### 6.7 Module 7 MAINTENANCE PRACTICES

Technical qualification:				Level			
Module 7 MAINTENANCE PRACTICES							
Sub module	Subject	Equivalent standard		Familiarisation	General knowledge	Detailed knowledge	No equivalent standard
7.1 Safety precautions – Aircraft and workshop	Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals	Leerplandoelstelling nr 112 – 114		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Instruction in the remedial action to be taken in the event of a fire or another accident with one or more of these hazards including Knowledge on extinguishing agents	Handboek: JEWEKA ISBN-13:978-90-78206-20- Onderhoudshandelingen Deel 1 Hoofdstuk 1		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
7.2 Workshop practices	Care of tools, Control of tools, Use of workshop materials	Leerplandoelstelling nr 115 – 117		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Dimensions, allowances and tolerances, standards of workmanship			<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>



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	Calibration of tools and equipment, calibration standards	Handboek: JEWEKA ISBN-13:978-90-78206-20- Onderhoudshandelingen Deel 1 Hoofdstuk 2	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
7.3 Tools	Common hand tool types	Leerplandoelstelling nr 118 – 121	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Common power tool types	Handboek: JEWEKA	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Operation and use of precision measuring tools	ISBN-13:978-90-78206-20- Onderhoudshandelingen Deel 1	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Lubrication equipment and methods	Hoofdstuk 3	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Operation, function and use of electrical general test equipment		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
7.4 Avionic general test equipment	Operation, function and use of avionic general test equipment.	Leerplandoelstelling nr 122  Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 16 Algemeen testequipment avionics	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
7.5 Engineering drawings, diagrams and standards	Drawing types and diagrams, their symbols, dimensions, tolerances and projections	Leerplandoelstelling nr 123 – 129	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Identifying title block information	Handboek: JEWEKA	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Microfilm, microfiche and computerised presentations	ISBN-13:978-90-78206-20- Onderhoudshandelingen Deel 1	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Specification 100 of the Air Transport Association (ATA) of America	Hoofdstuk 4	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Wiring diagrams and schematic diagrams		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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7.6 Fits and clearances	Drill sizes for bolt holes, Classes of fits	Leerplandoelstelling nr 130 – 134	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Common system of fits and clearances	Handboek: JEWEKA ISBN-13:978-90-78206-20- Onderhoudshandelingen Deel 1 Hoofdstuk 5	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Schedule of fits and clearances for aircraft and engines		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Limits for bow, twist and wear		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Standard methods for checking shafts, bearings and other parts		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
7.7 Electrical cables and connectors	Continuity, insulation and bonding techniques and testing;	Leerplandoelstelling nr 135 – 139	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Use of crimp tools: hand and hydraulic operated;	Handboek: JEWEKA ISBN-13:978-90-78206-20- Onderhoudshandelingen Deel 1 Hoofdstuk 6	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Testing of crimp joints;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Connector pin removal and insertion;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Co-axial cables: testing and installation precautions;		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Wiring protection techniques : Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink, wrapping shielding		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
7.8 Riveting	Riveted joints, rivet spacing and pitch	Leerplandoelstelling nr 140 – 141	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Tools used for riveting and dimpling	Handboek: JEWEKA ISBN-13:978-90-78206-20- 0Onderhoudshandelingen Deel 2 Hoofdstuk 7 Klinken	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Inspection of riveted joints		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
7.9 Pipes and hoses	Bending and belling/flaring aircraft pipes	Leerplandoelstelling nr 142 – 143	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Inspection and testing of aircraft pipes and hoses		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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	Installation and clamping of pipes	Handboek: JEWEKA ISBN-13:978-90-78206-20- Onderhoudshandelingen Deel 2 Hoofdstuk 9 Leidingen en slangen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
7.10 Springs	Inspection and testing of springs	Leerplandoelstelling nr 144  Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 10 Veren	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
7.11 Bearings	Testing, cleaning and inspection of bearings	Leerplandoelstelling nr 145 – 147	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Lubrication requirements of bearings	Handboek: JEWEKA ISBN-13:978-90-78206-20-0	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Defects in bearings and their causes	Onderhoudshandelingen Deel 2 Hoofdstuk 11 Lagere	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
7.12 Transmissions	Inspection of gears, backlash	Leerplandoelstelling nr 148	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Inspection of belts and pulleys, chains and sprockets	Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 12 Overbrengingen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Inspection of screw jacks, lever devices, push-pull rod systems		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
7.13 Control cables	Swaging of end fittings	Leerplandoelstelling nr 149 – 150	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Inspection and testing of control cables		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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	Bowden cables, Aircraft flexible control systems	Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 13 Bedieningskabels	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.14 Material handling</b>						
7.14.1 Material handling  Sheet metal	Marking out and calculation of bend allowance	Leerplandoelstelling nr 151 – 154	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Sheet metal working, including bending and forming	Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 6 Plaatwerk	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Inspection of sheet metal work		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7.14.2 Material handling  Composite and non-metallic	Bonding practices	Leerplandoelstelling nr 155	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Environmental conditions	Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 8 Composieten en niet-metalen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
	Inspection methods		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>7.15 Welding, brazing, soldering and bonding</b>						

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7.15(a) Welding, brazing, soldering and bonding	Soldering methods, Inspection of soldered joints	Leerplandoelstelling nr 156  Handboek: JEWEKA ISBN-13:978-90-78206-20- Onderhoudshandelingen Deel 1 Hoofdstuk 7	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
7.15(b) Welding, brazing, soldering and bonding	Welding and brazing methods	Leerplandoelstelling nr 157	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Inspection of welded and brazed joints	Handboek: JEWEKA ISBN-13:978-90-78206-20- Onderhoudshandelingen Deel 1 Hoofdstuk 8	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Bonding methods and Inspection of bonded joints		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.16 Aircraft weight and balance</b>						
7.16(a) Aircraft weight and balance	Centre of Gravity / Balance limits calculation: use of relevant documents	Leerplandoelstelling nr 158 – 161  Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 14 Zwaartepuntsbepaling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>

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7.16(b) Aircraft weight and balance	Preparation of aircraft for weighing	Leerplandoelstelling nr 162  Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 15 Het wegen van luchtvaartuigen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Aircraft weighing	Leerplandoelstelling nr 163  Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 15 Het wegen van luchtvaartuigen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
7.17 Aircraft handling and storage	Aircraft taxiing / towing and associated safety precautions	Leerplandoelstelling nr 164 – 168	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Aircraft jacking, chocking, securing and associated safety precautions	Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 17 Behandeling en opslag van luchtvaartuigen	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Aircraft storage methods		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Refuelling / defuelling procedures		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	De-icing/anti-icing procedures		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Electrical, Hydraulic and Pneumatic ground supplies		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Effects of environmental conditions on aircraft handling and operation		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
<b>7.18 Disassembly, inspection, repair and assembly techniques</b>						
7.18(a) Disassembly,	Types of defects and visual inspection techniques	Leerplandoelstelling nr 169 – 170	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>

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inspection, repair and assembly techniques	Corrosion removal, assessment and reProtection	Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 3 Defecten en visuele inspectie	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
7.18(b) Disassembly, inspection, repair and assembly techniques	General repair methods, Structural Repair Manual	Leerplandoelstelling nr 171 – 172	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
	Ageing, fatigue and corrosion control programmes	Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 2 Algemene reparatiemethode	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>
7.18(c) Disassembly, inspection, repair and assembly techniques	Non destructive inspection techniques: penetrant, radiographic, eddy current, ultrasonic and boroscope methods	Leerplandoelstelling nr 173  Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 4 Niet destructief onderzoek	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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7.18(d) Disassembly, inspection, repair and assembly techniques	Disassembly and re-assembly techniques.	Leerplandoelstelling nr 174  Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 1 Demontage en montagetechnieken	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
7.18(e) Disassembly, inspection, repair and assembly techniques	Trouble shooting techniques.	Leerplandoelstelling nr 175  Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 2 Hoofdstuk 5 Storingzoeken	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
<b>7.19 Abnormal events</b>						
7.19(a) Abnormal events	Inspections following lightning strikes and HIRF penetration	Leerplandoelstelling nr 176  Handboek: JEWEKA ISBN-13:978-90-78206-20-0 Onderhoudshandelingen Deel 1 Hoofdstuk 9	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>



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7.19(b) Abnormal events	Inspections following abnormal events such as heavy landings and flight through turbulence	Leerplandoelstelling nr 176  Handboek: JEWEKA ISBN-13:978-90-78206-20- Onderhoudshandelingen Deel 1 Hoofdstuk 10	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>7.20 Maintenance procedures</b>						
7.20 Maintenance procedures	Maintenance planning	Leerplandoelstelling nr 177  Handboek: JEWEKA ISBN-13:978-90-78206-20- Onderhoudshandelingen Deel 1 Hoofdstuk 11	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Modification procedures		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Stores procedures		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Certification/release procedures		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Interface with aircraft operation		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Maintenance Inspection/Quality Control/Quality Assurance		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Additional maintenance procedures		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Control of life limited components		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**6.8 Module 8 BASIC AERODYNAMICS**

Technical qualification:				Level			
Module 8 BASIC AERODYNAMICS							
Sub module	Subject	Equivalent standard	Familiarisation	General knowledge	Detailed knowledge	No equivalent standard	
8.1 Physics of the atmosphere	International Standard Atmosphere (ISA)	Leerplandoelstelling nr 178	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
	Application of International Standard Atmosphere to aerodynamics	Handboek: JEWEKA ISBN-13:978-90-78206-40-08 Aerodynamica Hoofdstuk 1 Atmosfeer	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
8.2 Aerodynamics	Airflow around a body;	Leerplandoelstelling nr 179 – 182	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
	Boundary layer, laminar and turbulent flow	Handboek: JEWEKA	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
	Free stream flow, relative airflow, upwash and downwash, vortices, stagnation	ISBN-13:978-90-78206-40-08 Aerodynamica	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
	The terms: camber, chord, mean aerodynamic chord	Hoofdstuk 1 Atmosfeer	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
	The terms: profile (parasite) drag, induced drag	Hoofdstuk 2 Stromingsleer	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	

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	The term: centre of pressure	Hoofdstuk 3 Grenslagen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	The term: angle of attack	Hoofdstuk 4 Draagkracht	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	The terms: wash in and wash out	Hoofdstuk 5 Vliegtuigweerstand	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	The terms: fineness ratio, wing shape and aspect ratio	Hoofdstuk 7 Overtrekken en hulpmiddelen bij lage vliegsnelheid	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Thrust, Weight, Aerodynamic Resultant		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Generation of Lift and Drag		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Angle of Attack		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Lift coefficient, Drag coefficient, polar curve		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Stall		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Aerofoil contamination including ice, snow, frost.		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
8.3 Theory of flight	Relationship between lift, weight, thrust and drag	Leerplandoelstelling nr 183	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Glide ratio	Handboek: JEWEKA	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Steady state flights	ISBN-13:978-90-78206-40-08	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Performance	Aerodynamica	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Theory of the turn	Hoofdstuk 6 Krachten en momenten	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Influence of load factor: stall	Hoofdstuk 7 Overtrekken en hulpmiddelen bij lage vliegsnelheid	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Influence of load factor: flight envelope	Hoofdstuk 9 Vliegtuigsprestaties	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Influence of load factor: structural limitations		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Lift augmentation		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
8.4 Flight stability and dynamics	Longitudinal stability (active and passive)	Leerplandoelstelling nr 184	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Lateral stability (active and passive)		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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	Directional stability (active and passive)	Handboek: JEWEKA ISBN-13:978-90-78206-40-08 Aerodynamica Hoofdstuk 8 Stabiliteit	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
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**6.9 Module 11 AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS**

**6.9.1 Module 11A TURBINE AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS**

Technical qualification:							
Module 11A TURBINE AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS			Level				
Sub module	Subject	Equivalent standard	Familiarisation	General knowledge	Detailed knowledge	No equivalent standard	
11.1.1 Aeroplane aerodynamics and flight controls	Operation and effect of: roll control: ailerons and spoilers	Leerplandoelstelling nr 185  Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen  Deel 1 Hoofdstuk 1 Overtrekken en hulpmiddelen bij lage vliegsnelheid.	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
	pitch control: elevators, stabilators, variable incidence stabilisers and canards		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
	yaw control, rudder limiters		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
	Control using elevons, ruddervators		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
	High lift devices, slots, slats, flaps, flaperons		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
Drag inducing devices, spoilers, lift dumpers, speed brakes	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>			
Effects of wing fences, saw tooth leading edges	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>			

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	Boundary layer control using, vortex generators, stall wedges or leading edge devices		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels	Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 2 Besturing	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
11.1.2 High speed flight	Speed of sound, subsonic flight, transonic flight, supersonic flight	Leerplandoelstelling nr 186	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Mach number, critical Mach number, Compressibility buffet, shock wave, Aerodynamic heating, Area rule	Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 3 Hogesnelheidsaerodynamica	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Factors affecting airflow in engine intakes of high speed aircraft		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Effects of sweepback on critical Mach number		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
11.2(a) Airframe structures – general concepts	Airworthiness requirements for structural strength	Leerplandoelstelling nr 187	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Structural classification, primary, secondary and tertiary	Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 4 Vliegtuigconstructies	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Fail safe, safe life, damage tolerance concepts		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Zonal and station identification systems		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Drains and ventilation provisions		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	System installation provisions		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Lightning strike protection provision		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
Aircraft bonding		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	

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11.2(b) Airframe structures – general concepts	Construction methods of: stressed skin fuselage	Leerplandoelstelling nr 188	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Construction methods of: formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, Anti-corrosive protection, wing, empennage and engine attachments, Methods of skinning	Handboek: JEWeka ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Structure assembly techniques: riveting, bolting, bonding	Deel 1	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Methods of surface protection: chromating, anodising, painting	Hoofdstuk 5 Constructiemethoden van specifieke onderdelen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Surface cleaning		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Airframe symmetry: methods of alignment and symmetry checks		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.1 Airframe structures – Aeroplanes  Fuselage ATA 52/53/56	Construction and pressurisation sealing	Leerplandoelstelling nr 189	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Wing, stabiliser, pylon and undercarriage attachments	Handboek: JEWeka ISBN-13:978-90-78206-09-5	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Seat installation and Cargo loading system	Vliegtuigaerodynamica, constructies en systemen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Doors and emergency exits: construction, mechanisms, operation and safety devices	Deel 1	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Windows and windscreen construction and mechanisms	Hoofdstuk 6 Constructie en drukcabineafdichting	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.2 Airframe structures – Aeroplanes  Wings ATA 57	Construction	Leerplandoelstelling nr 190	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel storage	Handboek: JEWeka ISBN-13:978-90-78206-09-5	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Landing gear, Pylon, Control surface, High lift/drag attachments	Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 7 De vleugel	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.3 Airframe struc-	Construction	Leerplandoelstelling nr 191	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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tures – Aeroplanes Stabilisers ATA 55	Control surface attachment	Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 8 Staartvlakken	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.4 Airframe structures – Aeroplanes Flight Control Surfaces ATA 55/57	Construction	Leerplandoelstelling nr 192	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Attachment	Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 9 Aerodynamisch balanceren	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Balancing – mass and aerodynamic		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.5 Airframe structures – Aeroplanes Nacelles/Pylons ATA 54	Construction	Leerplandoelstelling nr 193	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Firewalls	Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 10 Motorgondel en pylon	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Engine mounts		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.4 Air conditioning and cabin pressurisation ATA 21</b>						



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<p>11.4.1 Air conditioning and cabin pressurisation</p> <p>Air Supply ATA 21</p>	<p>Sources of air supply: engine bleed, APU, ground cart</p>	<p>Leerplandoelstelling nr 194</p> <p>Handboek: JEWEKA ISBN-13:978-90-78206-26-2 Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 1 Klimaat aan boord van vliegtuigen</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>11.4.2 Air conditioning and cabin pressurisation</p> <p>Air conditioning ATA 21</p>	<p>Air conditioning systems</p> <p>Air cycle and Vapour cycle machines</p> <p>Distribution systems</p> <p>Flow, temperature and humidity control system</p>	<p>Leerplandoelstelling nr 195</p> <p>Handboek: JEWEKA ISBN-13:978-90-78206-26-2 Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 1 Klimaat aan boord van vliegtuigen</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<p>11.4.3 Air conditioning and cabin pressurisation</p> <p>Pressurisation ATA 21</p>	<p>Pressurisation systems</p> <p>Control and indication including Control and safety valves</p> <p>Cabin pressure controllers</p>	<p>Leerplandoelstelling nr 196</p> <p>Handboek: JEWEKA ISBN-13:978-90-78206-26-2 Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 1 Klimaat aan boord van vliegtuigen</p>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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11.4.4 Air conditioning and cabin pressurisation  ATA 21	Protection devices and Warning devices	Leerplandoelstelling nr 197  Handboek: JEWEKA ISBN-13:978-90-78206-26-2 Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 1 Klimaat aan boord van vliegtuigen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.5.1 Instruments/ Avionic systems  Instruments systems ATA 31	Pitot static: altimeter, air speed indicator, vertical speed indicator	Leerplandoelstelling nr 198	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Gyroscopic: artificial horizon attitude director, direction indicator, horizontal situation indicator turn and slip indicator, turn co-ordinator	Handboek: JEWEKA ISBN-13:978-90-78206-26-2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Compasses: direct reading, remote reading	Vliegtuigaerodynamica, constructies en systemen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Angle of attack indication, Stall warning systems	Deel 3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Other aircraft system indication	Hoofdstuk 2 Instrumentensystemen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.5.2 Instruments/ Avionic systems  Avionic systems ATA 22 ATA 23 ATA 34	Fundamentals of system lay-outs and operation of: Auto Flight (ATA 22)	Leerplandoelstelling nr 199	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fundamentals of system lay-outs and operation of: Communications (ATA 23)	Handboek: JEWEKA ISBN-13:978-90-78206-26-2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fundamentals of system lay-outs and operation of: Navigation Systems (ATA 34)	Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 3 Avionics systemen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.6 Electrical power  ATA 23	Batteries Installation and Operation	Leerplandoelstelling nr 200	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	DC power generation	Handboek: JEWEKA	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	AC power generation	ISBN-13:978-90-78206-17-0	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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	Emergency power generation	Vliegtuigaerodynamica, constructies en systemen Deel 2 Hoofdstuk 1 Elektriciteit in vliegtuigen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Voltage regulation		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Power distribution		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Inverters, transformers, rectifiers		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Circuit protection		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	External/Ground power		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>11.7 Equipment and furnishing ATA 25</b>						
11.7(a) Equipment and furnishing	Emergency equipment requirements	Leerplandoelstelling nr 201	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Seats, harnesses and belts	Handboek: JEWeka ISBN-13:978-90-78206-26-2 Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 8 Uitrusting en inrichting	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.7(b) Equipment and furnishing	Cabin lay-out	Leerplandoelstelling nr 202	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Equipment lay-out	Handboek: JEWeka ISBN-13:978-90-78206-26-2 Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 8 Uitrusting en inrichting	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Cabin Furnishing Installation		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Cabin entertainment equipment		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Galley installation		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Cargo handling and retention equipment		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Airstairs		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.8 Fire protection ATA 26</b>						
11.8(a) Fire protection	Fire and smoke detection and warning systems	Leerplandoelstelling nr 203	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	Fire extinguishing systems		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	System tests	Handboek: JEWEKA ISBN-13:978-90-78206-17-0 Vliegtuigaerodynamica, constructies en systemen Deel 2 Hoofdstuk 2 Brandbestrijding en waarschuwingssystemen	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
11.8(b) Fire protection	Portable fire extinguisher	Leerplandoelstelling nr 204  Handboek: JEWEKA ISBN-13:978-90-78206-17-0 Vliegtuigaerodynamica, constructies en systemen Deel 2 Hoofdstuk 2 Brandbestrijding en waarschuwingssystemen	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
11.9 Flight controls	Primary controls: aileron, elevator, rudder, spoiler	Leerplandoelstelling nr 205	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
ATA 27	Trim control	Handboek: JEWEKA ISBN-13:978-90-78206-17-0 Vliegtuigaerodynamica, constructies en systemen Deel 2 Hoofdstuk 3 Vliegtuigbesturing	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Active load control		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	High lift devices		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Lift dump, Speed brakes		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	System operation: manual, hydraulic, pneumatic, electrical, fly-by-wire		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Artificial feel Yaw damper Mach trim Rudder limiter Gust locks systems		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Balancing and Rigging		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>

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	Stall protection/warning system		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.10 Fuel systems	System lay-out	Leerplandoelstelling nr 206	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ATA 28	Fuel tanks	Handboek: JEWEKA	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Supply systems	ISBN-13:978-90-78206-26-2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Dumping, venting and draining	Vliegtuigaerodynamica, constructies en systemen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Cross-feed and Transfer	Deel 3	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Indications and Warnings	Hoofdstuk 5 Navigatiesystemen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Refuelling and defuelling		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Longitudinal balance fuel systems		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.11 Hydraulic systems	System lay-out	Leerplandoelstelling nr 207	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ATA 29	Hydraulic fluids	Handboek: JEWEKA	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Hydraulic reservoirs and accumulators	ISBN-13:978-90-78206-09-5	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Pressure generation: electric, mechanical, pneumatic	Vliegtuigaerodynamica, constructies en systemen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Emergency pressure generation	Deel 1	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Pressure Control	Hoofdstuk 11 Hydraulisch voedingsstelsel	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Power distribution		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Indication systems		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Warning systems		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Interface with other systems		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.12 Ice and rain protection	Ice formation, classification and detection	Leerplandoelstelling nr 208	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ATA 30	Anti-icing systems: electrical, hot air and chemical	Handboek: JEWEKA	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	De-icing systems: electrical, hot air, pneumatic and chemical	ISBN-13:978-90-78206-26-2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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	Rain repellent	Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 10 IJs en regen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Probe and drain heating		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Wiper systems		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.13 Landing gear ATA 32	Construction, shock absorbing	Leerplandoelstelling nr 209	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Extension and retraction systems: normal	Handboek: JEWEKA ISBN-13:978-90-78206-17-0 Vliegtuigaerodynamica, constructies en systemen Deel 2 Hoofdstuk 4 Onderstellen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Extension and retraction systems: emergency		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Indications		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Warning		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Wheels, brakes, antiskid and autobraking		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Tyres		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Steering	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
11.14 Lights ATA 33	External: navigation, anti-collision, landing, taxiing, ice	Leerplandoelstelling nr 210	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Internal: cabin, cockpit, cargo	Handboek: JEWEKA ISBN-13:978-90-78206-17-0 Vliegtuigaerodynamica, constructies en systemen Deel 2 Hoofdstuk 5 Vliegtuigverlichting	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Emergency		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.15 Oxygen ATA 35	System lay-out: cockpit	Leerplandoelstelling nr 211	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	System lay-out: cabin	Handboek: JEWEKA ISBN-13:978-90-78206-17-0 Vliegtuigaerodynamica, constructies en systemen Deel 2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Sources, storage, charging and distribution		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Supply regulation		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Indications		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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	Warnings	Hoofdstuk 6 Zuurstof	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.16 Pneumatic/ vacuum  ATA 36	System lay-out	Leerplandoelstelling nr 212	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Sources: engine / APU, compressors, reservoirs	Handboek: JEWEKA	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Sources: ground supply	ISBN-13:978-90-78206-17-0	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Pressure control	Vliegtuigaerodynamica, constructies en systemen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Distribution	Deel 2	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Indications	Hoofdstuk 7 Pneumatisch systeem	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Warnings		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Interfaces with other systems		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.17 Water/waste  ATA 38	Water system lay-out, supply, distribution, servicing and draining	Leerplandoelstelling nr 213	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Toilet system lay-out, flushing and servicing	Handboek: JEWEKA	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Corrosion aspects	ISBN-13:978-90-78206-26-2 Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 11 Water- en afvalsystemen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.18 On board maintenance systems  ATA 45	Central maintenance computers	Leerplandoelstelling nr 214	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Data loading system	Handboek: JEWEKA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Electronic library system	ISBN-13:978-90-78206-26-2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Printing	Vliegtuigaerodynamica, constructies en systemen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Structure monitoring (damage tolerance monitoring)	Deel 3 Hoofdstuk 7 On Board Maintenance Systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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**6.9.2 Module 11B PISTON AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS**

Technical qualification:						
Module 11B PISTON AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS			Level			
Sub module	Subject	Equivalent standard	Familiarisation	General knowledge	Detailed knowledge	No equivalent standard
11.1.1 Aeroplane aerodynamics and flight controls	Operation and effect of: roll control: ailerons and spoilers	Leerplandoelstelling nr 215 = 216  Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 1 Overtrekken en hulpmiddelen bij lage vliegsnelheid	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	pitch control: elevators, stabilators, variable incidence stabilisers and canards		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	yaw control, rudder limiters		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Control using elevons, ruddervators		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	High lift devices, slots, slats, flaps, flaperons		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Drag inducing devices, spoilers, lift dumpers, speed brakes		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
Effects of wing fences, saw tooth leading edges	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>		
Boundary layer control using, vortex generators, stall wedges or leading edge devices	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



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	Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels	Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 2 Besturing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.1.2 High speed flight	Niet van toepassing					
11.2(a) Airframe structures – general concepts	Airworthiness requirements for structural strength	Leerplandoelstelling nr 217 = 187	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Structural classification, primary, secondary and tertiary	Leerplandoelstelling nr 187	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fail safe, safe life, damage tolerance concepts		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Zonal and station identification systems	Handboek: JEWEKA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue	1 ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Drains and ventilation provisions	Deel	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	System installation provisions	Hoofdstuk 4 Vliegtuigconstructies	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Lightning strike protection provision		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Aircraft bonding		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.2(b) Airframe structures – general concepts	Construction methods of: stressed skin fuselage	Leerplandoelstelling nr 218 = 188	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Construction methods of: formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, Anti-corrosive protection, wing, empennage and engine attachments, Methods of skinning	Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Structure assembly techniques: riveting, bolting, bonding	Deel 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Methods of surface protection: chromating, anodising, painting	Hoofdstuk 5 Constructiemethoden van specifieke	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	Surface cleaning	ke onderdelen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Airframe symmetry: methods of alignment and symmetry checks		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.1 Airframe structures – Aeroplanes  Fuselage ATA 52/53/56	Construction and pressurisation sealing	Leerplandoelstelling nr 219 = 189	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Wing, tail-plane pylon and undercarriage attachments	Handboek: JEWEKA ISBN-13:978-90-78206-09-5	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Seat installation	Vliegtuigaerodynamica, constructies en systemen Deel 1	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Doors and emergency exits: construction and operation	Hoofdstuk 6 Constructie en drukcabineafdichting	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Windows and windscreen attachment		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.2 Airframe structures – Aeroplanes  Wings ATA 57	Construction	Leerplandoelstelling nr 220 = 190	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel storage	Handboek: JEWEKA ISBN-13:978-90-78206-09-5	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Landing gear, Pylon, Control surface, High lift/drag attachments	Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 7 De vleugel	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.3 Airframe structures – Aeroplanes  Stabilisers ATA 55	Construction	Leerplandoelstelling nr 221 = 191	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Control surface attachment	Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 8 Staartvlakken	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.4 Airframe structures – Aeroplanes	Construction	Leerplandoelstelling nr 222 – 192	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Attachment		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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Flight Control Surfaces ATA 55/57	Balancing – mass and aerodynamic	Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 9 Aerodynamisch balanceren	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.3.5 Airframe structures – Aeroplanes  Nacelles/Pylons ATA 54	Construction	Leerplandoelstelling nr 223 = 193	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Firewalls	Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 10 Motorgondel en pylon	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Engine mounts		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.4 Air conditioning and cabin pressurisation  ATA 21	Pressurisation and air conditioning systems	Leerplandoelstelling nr 224 – 194	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Cabin pressure controllers, protection devices and Warning devices	Leerplandoelstelling nr 225 – 195 Leerplandoelstelling nr 226 – 196 Leerplandoelstelling nr 227  Handboek: JEWEKA ISBN-13:978-90-78206-26-2 Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 1 Klimaat aan boord van vliegtuigen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.5.1 Instruments/	Pitot static: altimeter, air speed indicator, vertical speed indicator	Leerplandoelstelling nr 228 = 198	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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Avionic systems	Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn co-ordinator	Handboek: JEWEKA ISBN-13:978-90-78206-26-2 Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 2 Instrumentensystemen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Instruments systems ATA 31	Compasses: direct reading, remote reading		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Angle of attack indication, Stall warning systems		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Other aircraft system indication		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.5.2 Instruments/ Avionic systems	Fundamentals of system lay-outs and operation of: Auto Flight (ATA 22)	Leerplandoelstelling nr 229 = 199	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Avionic systems ATA 22	Fundamentals of system lay-outs and operation of: Communications (ATA 23)	Handboek: JEWEKA ISBN-13:978-90-78206-26-2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ATA 23 ATA 34	Fundamentals of system lay-outs and operation of: Navigation Systems (ATA 34)	Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 3 Avionics systemen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.6 Electrical power	Batteries Installation and Operation	Leerplandoelstelling nr 230 = 200	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ATA 23	DC power generation	Handboek: JEWEKA ISBN-13:978-90-78206-17-0 Vliegtuigaerodynamica, constructies en systemen Deel 2 Hoofdstuk 1 Elektriciteit in vliegtuigen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Voltage regulation		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Power distribution		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Circuit protection		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Inverters, transformers		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<b>11.7 Equipment and furnishing ATA 25</b>						
11.7(a) Equipment	Emergency equipment requirements	Leerplandoelstelling nr 231 – 201	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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and furnishing	Seats, harnesses and belts	Handboek: JEWEKA ISBN-13:978-90-78206-26-2 Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 8 Uitrusting en inrichting	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11.7(b) Equipment and furnishing	Cabin lay-out	Leerplandoelstelling nr 232 = 202	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Equipment lay-out	Handboek: JEWEKA	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Cabin Furnishing Installation	ISBN-13:978-90-78206-26-2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Cabin entertainment equipment	Vliegtuigaerodynamica, constructies en systemen	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Galley installation	Deel 3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Cargo handling and retention equipment	Hoofdstuk 8 Uitrusting en inrichting	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Airstairs		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>11.8 Fire protection ATA 26</b>						
11.8(a) Fire protection	Fire and smoke detection and warning systems	Leerplandoelstelling nr 233 = 203	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Fire extinguishing systems	Handboek: JEWEKA	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	System tests	ISBN-13:978-90-78206-17-0 Vliegtuigaerodynamica, constructies en systemen Deel 2 Hoofdstuk 2 Brandbestrijding en waarschuwingssystemen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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11.8(b) Fire protection	Portable fire extinguisher	Leerplandoelstelling nr 234 = 204  Handboek: JEWEKA ISBN-13:978-90-78206-17-0 Vliegtuigaerodynamica, constructies en systemen Deel 2 Hoofdstuk 2 Brandbestrijding en waarschuwingssystemen	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
11.9 Flight controls  ATA 27	Primary controls: aileron, elevator, rudder, spoiler	Leerplandoelstelling nr 235 = 205	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Trim tabs	Handboek: JEWEKA	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	High lift devices	ISBN-13:978-90-78206-17-0	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	System operation: manual	Vliegtuigaerodynamica, constructies en systemen	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Gust locks	Deel 2	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Balancing and Rigging	Hoofdstuk 3 Vliegtuigbesturing	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Stall warning system		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
11.10 Fuel systems  ATA 28	System lay-out	Leerplandoelstelling nr 236 = 206	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Fuel tanks	Handboek: JEWEKA	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Supply systems	ISBN-13:978-90-78206-26-2	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Cross-feed and Transfer	Vliegtuigaerodynamica, constructies en systemen	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Indications and Warnings	Deel 3	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Refuelling and defuelling	Hoofdstuk 5 Navigatiesystemen	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
11.11 Hydraulic systems	System lay-out	Leerplandoelstelling nr 237 – 207	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Hydraulic fluids		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>

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ATA 29	Hydraulic reservoirs and accumulators	Handboek: JEWEKA ISBN-13:978-90-78206-09-5 Vliegtuigaerodynamica, constructies en systemen Deel 1 Hoofdstuk 11 Hydraulisch voedingsstelsysteem	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Pressure generation: electric, mechanical		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Pressure Control		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Power distribution		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Indication systems		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Warning systems		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.12 Ice and rain protection	Ice formation, classification and detection	Leerplandoelstelling nr 238 = 208  Handboek: JEWEKA ISBN-13:978-90-78206-26-2 Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 10 IJs en regen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	De-icing systems: electrical, hot air, pneumatic and chemical		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Probe and drain heating		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Wiper systems		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.13 Landing gear ATA 32	Construction, shock absorbing	Leerplandoelstelling nr 239 – 209  Handboek: JEWEKA ISBN-13:978-90-78206-17-0 Vliegtuigaerodynamica, constructies en systemen Deel 2 Hoofdstuk 4 Onderstellen	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Extension and retraction systems: normal		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Extension and retraction systems: emergency		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Indications		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Warning		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Wheels, brakes, antiskid and autobraking		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Tyres		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Steering		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.14 Lights	External: navigation, anti-collision, landing, taxiing, ice	Leerplandoelstelling nr 240 = 210	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Internal: cabin, cockpit, cargo		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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ATA 33	Emergency	Handboek: JEWEKA ISBN-13:978-90-78206-17-0 Vliegtuigaerodynamica, constructies en systemen Deel 2 Hoofdstuk 5 Vliegtuigverlichting	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.15 Oxygen	System lay-out: cockpit	Leerplandoelstelling nr 241 = 211	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ATA 35	System lay-out: cabin	Handboek: JEWEKA ISBN-13:978-90-78206-17-0 Vliegtuigaerodynamica, constructies en systemen Deel 2 Hoofdstuk 6 Zuurstof	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Sources, storage, charging and distribution		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Supply regulation		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Indications		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Warnings		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.16 Pneumatic/ vacuum	System lay-out	Leerplandoelstelling nr 242 = 212	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ATA 36	Sources: engine / APU, compressors, reservoirs	Handboek: JEWEKA ISBN-13:978-90-78206-17-0 Vliegtuigaerodynamica, constructies en systemen Deel 2 Hoofdstuk 7 Pneumatisch systeem	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Sources: ground supply		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Pressure control		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Distribution		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Indications		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Warnings		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Interfaces with other systems		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
11.17 Water/waste	Water system lay-out, supply, distribution, servicing and draining	Leerplandoelstelling nr 243 – 213	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	Toilet system lay-out, flushing and servicing		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>



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ATA 38	Corrosion aspects	Handboek: JEWEKA ISBN-13:978-90-78206-26-2 Vliegtuigaerodynamica, constructies en systemen Deel 3 Hoofdstuk 11 Water- en afvalsystemen	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
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## 6.10 Module 15 GAS TURBINE ENGINE

Technical qualification:							
Module 15 GAS TURBINE ENGINE		Level					
Sub module	Subject	Equivalent standard					
			<table border="1"> <tr> <td>Familiarisation</td> <td>General knowledge</td> <td>Detailed knowledge</td> <td>No equivalent standard</td> </tr> </table>	Familiarisation	General knowledge	Detailed knowledge	No equivalent standard
Familiarisation	General knowledge	Detailed knowledge	No equivalent standard				
15.1 Fundamentals	Potential energy, kinetic energy	Leerplandoelstelling nr 244	<table border="1"> <tr> <td><input type="checkbox"/></td> <td><b>X</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>			
	Newton's laws of motion		<table border="1"> <tr> <td><input type="checkbox"/></td> <td><b>X</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>			
	Brayton cycle	Handboek: JEWEKA ISBN-13:978-90-78206-03-3	<table border="1"> <tr> <td><input type="checkbox"/></td> <td><b>X</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>			
	The relationship between force, work, power, energy, velocity, acceleration	Gasturbines algemeen Deel 1	<table border="1"> <tr> <td><input type="checkbox"/></td> <td><b>X</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>				
Constructional arrangement and operation of turbojet	Hoofdstuk 1 Inleiding & principes	<table border="1"> <tr> <td><input type="checkbox"/></td> <td><b>X</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>				
Constructional arrangement and operation of turbofan		<table border="1"> <tr> <td><input type="checkbox"/></td> <td><b>X</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>				
Constructional arrangement and operation of turboshaft		<table border="1"> <tr> <td><input type="checkbox"/></td> <td><b>X</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>				
Constructional arrangement and operation of turboprop		<table border="1"> <tr> <td><input type="checkbox"/></td> <td><b>X</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>				
15.2 Engine performance	Gross thrust, net thrust, choked nozzle thrust	Leerplandoelstelling nr 245	<table border="1"> <tr> <td><input type="checkbox"/></td> <td><b>X</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>			
Thrust distribution		<table border="1"> <tr> <td><input type="checkbox"/></td> <td><b>X</b></td> <td><input type="checkbox"/></td> <td><input type="checkbox"/></td> </tr> </table>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>				

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	Resultant thrust	Handboek: JEWEKA ISBN-13:978-90-78206-03-3 Gasturbines algemeen Deel 1 Hoofdstuk 2 Motorprincipes of engine performance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Thrust horsepower, equivalent shaft horsepower		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Specific fuel consumption		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Engine efficiencies		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	By-pass ratio		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Engine pressure ratio		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Pressure, temperature and velocity of the gas flow;		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Engine ratings, static thrust, influence of speed, altitude and hot climate, flat rating, limitations		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.3 Inlet	Compressor inlet ducts	Leerplandoelstelling nr 246	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Effects of various inlet configurations	Handboek: JEWEKA ISBN-13:978-90-78206-03-3 Gasturbines algemeen Deel 1 Hoofdstuk 3 De inlaat	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Ice protection		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.4 Compressors	Axial types	Leerplandoelstelling nr 247	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Centrifugal types	Handboek: JEWEKA ISBN-13:978-90-78206-03-3 Gasturbines algemeen Deel 1 Hoofdstuk 4 De compressor	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Constructional features and operating principles and applications		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fan balancing		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Operation		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Causes and effects of compressor stall and surge		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	Methods of air flow control: bleed valves		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Methods of air flow control: variable inlet guide vanes		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Methods of air flow control: variable stator vanes		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Methods of air flow control: rotating stator blades		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Compressor ratio		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
15.5 Combustion section	Constructional features and principles of operation.	Leerplandoelstelling nr 248  Handboek: JEWEKA ISBN-13:978-90-78206-03-3 Gasturbines algemeen Deel 1 Hoofdstuk 5 De verbrandingssectie of combuster	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
15.6 Turbine section	Operation of different turbine blade types	Leerplandoelstelling nr 249	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Characteristics of different turbine blade types	Handboek: JEWEKA	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Blade to disk attachment	ISBN-13:978-90-78206-03-3	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Nozzle guide vanes	Gasturbines algemeen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Causes and effects of turbine blade stress	Deel 1	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Causes and effects of turbine blade creep	Hoofdstuk 6 De turbine	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
15.7 Exhaust	Constructional features	Leerplandoelstelling nr 250	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Principles of operation	Handboek: JEWEKA	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Convergent, divergent and variable area nozzles	ISBN-13:978-90-78206-03-3	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Engine noise reduction	Gasturbines algemeen	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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	Thrust reversers	Deel 1 Hoofdstuk 7 De uitlaat	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.8 Bearings and seals	Constructional features	Leerplandoelstelling nr 251	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Principles of operation.	Handboek: JEWEKA ISBN-13:978-90-78206-03-3 Gasturbines algemeen Deel 1 Hoofdstuk 8 Lagers en afdichtingen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.9 Lubricants and fuels	Properties	Leerplandoelstelling nr 252	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Specifications	Handboek: JEWEKA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel additives	ISBN:978-90-78206-31-6	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Safety precautions	Gasturbines systemen Deel 2 Hoofdstuk 2 Smeermiddelen & brandstoffen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.10 Lubrication systems	System operation	Leerplandoelstelling nr 253	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	System lay-out and components	Handboek: JEWEKA ISBN:978-90-78206-31-6 Gasturbines systemen Deel 2 Hoofdstuk 3 Het smeersysteem	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.11 Fuel systems	Operation of engine control and fuel metering systems including electronic engine control (FADEC)	Leerplandoelstelling nr 254	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	Systems lay-out and components	Handboek: JEWEKA ISBN:978-90-78206-31-6 Gasturbines systemen Deel 2 Hoofdstuk 4 Het motorbrandstofsysteem	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.12 Air systems	Operation of engine air distribution	Leerplandoelstelling nr 255	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Operation of anti - ice control systems	Handboek: JEWEKA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Internal cooling	ISBN:978-90-78206-31-6 Gasturbines systemen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Sealing	Deel 2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	External air services	Hoofdstuk 5 Motorluchtsysteem	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.13 Starting and ignition systems	Operation of engine start systems and components	Leerplandoelstelling nr 256	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Ignition systems and components	Handboek: JEWEKA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Maintenance safety requirements	ISBN:978-90-78206-31-6 Gasturbines systemen Deel 2 Hoofdstuk 6 Start- en ontstekingskring	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.14 Engine indicating systems	Exhaust Gas Temperature	Leerplandoelstelling nr 257	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Interstage Turbine Temperature	Handboek: JEWEKA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Engine Thrust Indication: Engine Pressure Ratio	ISBN:978-90-78206-31-6 Gasturbines systemen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Engine Thrust Indication: Engine turbine discharge pressure	Deel 2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Engine Thrust Indication: Jet pipe pressure systems	Hoofdstuk 7 Motorindicatiesystemen	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	Oil pressure and temperature		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Fuel pressure and flow		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Engine speed		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Vibration measurement and indication		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Torque		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Power		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
15.15 Power augmentation systems	Operation and applications	Leerplandoelstelling nr 258	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Water injection	Handboek: JEWEKA	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Water methanol	ISBN:978-90-78206-31-6	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Afterburner systems	Gasturbines systemen Deel 2 Hoofdstuk 8 Power augmentation systems	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.16 Turbo-prop engines	Gas coupled/free turbine	Leerplandoelstelling nr 259	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Gear coupled turbines	Handboek: JEWEKA	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Reduction gears	ISBN-13:978-90-78206-03-3	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Integrated engine and propeller controls	Gasturbines algemeen Deel 1	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Overspeed safety devices	Hoofdstuk 10 De turboprop	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
15.17 Turbo-shaft engines	Arrangements	Leerplandoelstelling nr 260	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Drive systems	Handboek: JEWEKA	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Reduction gearing	ISBN-13:978-90-78206-03-3	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>

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	Couplings	Gasturbines algemeen Deel 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Control systems	Hoofdstuk 11 De turboshaft	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.18 Auxiliary power unit	Purpose	Leerplandoelstelling nr 261	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Operation	Handboek: JEWEKA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Protective systems	ISBN-13:978-90-78206-03-3 Gasturbines algemeen Deel 1 Hoofdstuk 12 De APU	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.19 Powerplant installation	Configuration of firewalls, cowlings, acoustic panels	Leerplandoelstelling nr 262	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Configuration of engine mounts, anti-vibration mounts	Handboek: JEWEKA	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Configuration of hoses, pipes, feeders	ISBN-13:978-90-78206-03-3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Configuration of connectors, wiring looms, control cables and rods	Gasturbines algemeen Deel 1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Configuration of lifting points and drains	Hoofdstuk 13 Powerplant installation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15.20 Fire protection systems	Operation of detection and extinguishing systems	Leerplandoelstelling nr 263  Handboek: JEWEKA ISBN:978-90-78206-31-6 Gasturbines systemen Deel 2 Hoofdstuk 9 Fire protection systems	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



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15.21 Engine monitoring and ground operation	Procedures for starting and ground run-up	Leerplandoelstelling nr 264  Handboek: JEWEKA ISBN:978-90-78206-31-6 Gasturbines systemen Deel 2 Hoofdstuk 10 Engine monitoring & ground operation	<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Interpretation of engine power output and parameters		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Trend (including oil analysis, vibration and boroscope) monitoring		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Inspection of engine and components to criteria, tolerances and data specified by engine manufacturer		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Compressor washing/cleaning		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
	Foreign Object Damage		<input type="checkbox"/>	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>
15.22 Engine storage and preservation	Preservation for the engine and accessories/systems	Leerplandoelstelling nr 265  Handboek: JEWEKA ISBN:978-90-78206-31-6 Gasturbines systemen Deel 2 Hoofdstuk 11 Engine storage & preservation	<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>
	Depreservation for the engine and accessories/systems		<input type="checkbox"/>	<b>X</b>	<input type="checkbox"/>	<input type="checkbox"/>



## Rapport examenvrijstelling Vliegtuigtechnieken

School: **VVKSO – OSVG**

Datum opmaak: 25 januari 2009

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### 7 Overzicht van de herzieningen

Herziening	Datum	Reden
Origineel	25 januari 2009	Origineel basisdocument

## **8 Lijst der Bestemmingen**

1. Directoraat der Luchtvaart

2.