Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
02										
(01)		Explain the procedure for critical power-unit failure before and after the landing decision point.			X	X				
(02)		Explain that the portion of flight after the landing decision point must be carried out visually.			X	X				
(03)		Explain the procedures and required obstacle clearances for landings on different heliports/helidecks.			X	X				
034 04 06 03		Use of helicopter performance data								
(01)		Determine from helicopter performance data sheets the maximum mass that satisfies the operational regulations for landing in terms of regulated landing mass, LDRH and minimum gradients for climb and obstacle clearance.			X	X				

Subject 040 - Human Performance and Limitations

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
040 00 00 00		HUMAN FACTORS: BASIC CONCEPTS								
040 01 01 00		Human factors in aviation								
040 01 01 01		Becoming a competent pilot								
(01)		State that competence is based on knowledge, skills and attitudes of the individual pilot, and list the ICAO eight core competencies: — application of procedures; — communication; — aircraft flight path management, automation; — aircraft flight path management, manual control; — leadership and teamwork;	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		— problem-solving and decision-making; — situation awareness; — workload management.								
040 01 02 00		Intentionally left blank								
040 01 03 00		Flight safety concepts								
040 01 03 01		Threat and error management (TEM) model and SHELL model								
(01)		Explain the three components of the TEM model.	X	X	X	X	X	X	X	
(02)		Explain and give examples of latent threats.	X	X	X	X	X	X	X	
(01)		Explain and give examples of environmental threats.	X	X	X	X	X	X	X	
(04)		Explain and give examples of organisational threats.	X	X	X	X	X	X	X	
(02)		Explain and give a definition of ‘error’ according to the TEM model of ICAO Doc 9683 (Part II, Chapter 2).	X	X	X	X	X	X	X	
(03)		Give examples of different countermeasures which may be used in order to manage threats, errors, and undesired aircraft states.	X	X	X	X	X	X	X	
(07)		Explain and give examples of procedural error, communication errors, and aircraft handling errors.	X	X	X	X	X	X	X	
(05)		Explain and give examples of ‘undesired aircraft states’.	X	X	X	X	X	X		
(09)		State the components of the SHELL model.	X	X	X	X	X	X		
(10)		State the relevance of the SHELL model to the work in the cockpit.	X	X	X	X	X	X		
040 01 04 00		Safety culture								
040 01 04 01		Safety culture and safety management								
(02)		Distinguish between ‘open cultures’ and ‘closed cultures’.	X	X	X	X	X	X	X	
(03)		Illustrate how safety culture is reflected in national culture.	X	X	X	X	X	X	X	
(04)		Discuss the established expression ‘safety first’ in a commercial entity.	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
(05)		Explain James Reason's 'Swiss Cheese Model'.	X	X	X	X	X	X	X	
(06)		State the important factors that promote a good safety culture.	X	X	X	X	X	X	X	
(06)		Distinguish between 'just culture' and 'non-punitive culture'.	X	X	X	X	X	X	X	
(07)		Name the five components which form safety culture (according to James Reason: informed culture, reporting culture, learning culture, just culture, flexible culture).	X	X	X	X	X	X	X	
(08)		Name the basic concepts of safety management system (SMS) (including hazard identification and risk management) and its relationship with safety culture in order to: — define how the organisation is set up to manage risks; — identify workplace risk and implement suitable controls; — implement effective communication across all levels of the organisation.	X	X	X	X	X	X	X	
040 02 00 00		Basics of aviation physiology and health maintenance								
040 02 01 00		Basics of flight physiology								
040 02 01 01		The atmosphere								
(01)		State that the volume percentage of the gases in ambient air will remain constant at all altitudes at which conventional aircraft operate.	X	X	X	X	X	X		
040 02 01 02		Respiratory and circulatory system								
(01)		List the main components of the respiratory system and their function.	X	X	X	X	X	X		
(02)		Identify the different volumes of air in the lungs and state the normal respiratory rate.	X	X	X	X	X	X		
(03)		Explain the role of carbon dioxide in the control and regulation of respiration.	X	X	X	X	X	X		
(04)		Describe the basic processes of	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		external respiration and internal respiration.								
(05)		List the factors that determine pulse rate.	X	X	X	X	X	X		
(06)		Name the major components of the circulatory system and describe their function.	X	X	X	X	X	X		
(07)		State the values for a normal pulse rate and the average cardiac output (heart rate × stroke volume) of an adult at rest.	X	X	X	X	X	X		
(08)		Define 'systolic' and 'diastolic' blood pressure.	X	X	X	X	X	X		
(09)		State the normal blood pressure ranges and units of measurement.	X	X	X	X	X	X		
(10)		List the main constituents of blood and describe their functions.	X	X	X	X	X	X		
(11)		Stress the function of haemoglobin in the circulatory system.	X	X	X	X	X	X		
(12)		Define 'anaemia' and state its common causes.	X	X	X	X	X	X		
(13)		Indicate the effect of increasing altitude on haemoglobin oxygen saturation.	X	X	X	X	X	X		
		Hypertension and hypotension								
(14)		Define 'hypertension' and 'hypotension'.	X	X	X	X	X	X		
(15)		List the effects that high and low blood pressure will have on some normal functions of the human body.	X	X	X	X	X	X		
(16)		State that both hypotension and hypertension may disqualify a pilot from obtaining medical clearance to fly.	X	X	X	X	X	X		
(17)		List the factors which can lead to hypertension for an individual.	X	X	X	X	X	X		
(18)		State the corrective actions that may be taken to reduce high blood pressure.	X	X	X	X	X	X		
(19)		Stress that hypertension is the major factor of strokes in the general population.	X	X	X	X	X	X		
		Coronary artery disease								
(20)		Differentiate between 'angina' and 'heart attack'.	X	X	X	X	X	X		
(21)		Explain the major risk factors for coronary disease.	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
(22)		State the role physical exercise plays in reducing the chances of developing coronary disease.	X	X	X	X	X	X		
		Hypoxia								
(23)		Define the two major forms of hypoxia (hypoxic and anaemic), and the common causes of both.	X	X	X	X	X	X		
(24)		State the symptoms of hypoxia.	X	X	X	X	X	X		
(25)		State that healthy people are able to compensate for altitudes up to approximately 10 000–12 000 ft.	X	X	X	X	X	X		
(26)		Name the three physiological thresholds and allocate the corresponding altitudes for each of them: — reaction threshold (7 000 ft); — disturbance threshold (10–12 000 ft); and — critical threshold (22 000 ft).	X	X	X	X	X	X		
(27)		State the altitude at which short-term memory begins to be affected by hypoxia.	X	X	X	X	X	X		
(28)		Define the terms ‘time of useful consciousness’ (TUC) and ‘effective performance time’ (EPT).	X	X	X	X	X	X		
(29)		State that TUC varies among individuals, but the approximate values for a person seated (at rest) are: 20 000 ft 30 min 30 000 ft 1–2 min 35 000 ft 30–90 s 40 000 ft 15–20 s	X	X	X	X	X	X		
(30)		List the factors that determine the severity of hypoxia.	X	X	X	X	X	X		
(31)		State the equivalent altitudes when breathing ambient air and 100 % oxygen at mean sea level (MSL) and at approximately 10 000, 30 000 and 40 000 ft.	X	X	X	X	X	X		
		Hyperventilation								
(32)		Describe the role of carbon dioxide in hyperventilation.	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
(33)		Define the term 'hyperventilation'.	X	X	X	X	X	X		
(34)		List the factors that cause hyperventilation.	X	X	X	X	X	X		
(35)		State that hyperventilation may be caused by psychological or physiological reasons.	X	X	X	X	X	X		
(36)		List the signs and symptoms of hyperventilation.	X	X	X	X	X	X		
(37)		List the measures which may be taken to counteract hyperventilation: breath slowly, close one opening of the nose, speak loudly, place a paper bag over nose and mouth.	X	X	X	X	X	X		
		Decompression sickness/illness								
(38)		State the normal range of cabin pressure altitude in pressurised commercial air transport aircraft and describe its protective function for aircrew and passengers.	X	X	X	X	X	X		
(39)		List the vital actions the crew has to perform when cabin pressurisation is lost (oxygen mask on, emergency descent, land as soon as possible, and no further flight for the next minimum 24 hours). State that decompression sickness symptoms can occur up to 24 hours later.	X	X	X	X	X	X		
(40)		Identify the causes of decompression sickness in flight operation.	X	X	X	X	X	X		
(41)		State how decompression sickness can be prevented.	X	X	X	X	X	X		
(42)		List the symptoms of decompression sickness (bends, creeps, chokes, staggers).	X	X	X	X	X	X		
(43)		Indicate how decompression sickness may be treated.	X	X	X	X	X	X		
(44)		Define the hazards of diving and flying, and give the recommendations associated with these activities.	X	X	X	X	X	X		
		Acceleration								
(45)		Define 'linear acceleration' and 'angular acceleration'.	X	X	X	X	X	X	X	
(46)		Describe the effects of z-acceleration on the circulation and	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
		blood volume distribution.								
(47)		List magnitude, duration and onset as factors that determine the effects of acceleration on the human body.	X	X	X	X	X	X	X	
(48)		List the effects of positive acceleration with respect to type, sequence and corresponding G-load.	X	X	X	X	X	X		
		Carbon monoxide								
(49)		State how carbon monoxide is produced.	X	X	X	X	X	X		
(50)		State how the presence of carbon monoxide in the blood affects the distribution of oxygen.	X	X	X	X	X	X		
(51)		List the signs and symptoms of carbon-monoxide poisoning.	X	X	X	X	X	X		
(52)		Explain immediate countermeasures on suspicion of carbon- monoxide poisoning and how poisoning can be treated later on the ground.	X	X	X	X	X	X		
040 02 01 03		High-altitude environment								
(01)		State how an increase in altitude may change the proportion of ozone in the atmosphere and that aircraft can be equipped with special ozone removers.	X							
		Radiation								
(02)		State the sources of radiation at high altitude.	X							
(03)		List the effects of excessive exposure to radiation.	X							
		Humidity								
(04)		List the factors that affect the relative humidity of both the atmosphere and cabin air.	X							
(05)		List the effects of low humidity on human body to be spurious thirst, dry eyes, skin and mucous membranes, and indicate measures that can be taken: drinking water, using eye drops and aqueous creams.	X							
040 02 02 00		People and the environment: the sensory system								
040 02 02 01		The different senses								

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
(01)		List the different senses.	X	X	X	X	X	X	X	
040 02 02 02		Central, peripheral and autonomic nervous system								
(01)		Define the term ‘sensory threshold’.	X	X	X	X	X	X		
(02)		Define the term ‘sensitivity’, especially in the context of vision.	X	X	X	X	X	X		
(03)		Give examples of sensory adaptation.	X	X	X	X	X	X		
(04)		Define the term ‘habituation’ and state its implication for flight safety.	X	X	X	X	X	X		
040 02 02 03		Vision								
		Functional anatomy								
(01)		Name the most important parts of the eye and the pathway to the visual cortex.	X	X	X	X	X			
(02)		State the basic functions of the parts of the eye.	X	X	X	X	X	X		
(03)		Define ‘accommodation’.	X	X	X	X	X	X		
(04)		Distinguish between the functions of the rod and cone cells.	X	X	X	X	X	X		
(05)		Describe the distribution of rod and cone cells in the retina and explain their relevance to vision.	X	X	X	X	X	X		
		The fovea (fovea centralis) and peripheral vision								
(06)		Explain the terms ‘visual acuity’, ‘visual field’, ‘central vision’, ‘peripheral vision’ and ‘the fovea’, and explain their function in the process of vision.	X	X	X	X	X	X		
(07)		List the factors that may degrade visual acuity and the importance of ‘lookout’.	X	X	X	X	X	X		
(08)		State the limitations of night vision and the different scanning techniques at both night and day.	X	X	X	X	X	X		
(09)		State the time necessary for the eye to adapt both to bright light and the dark.	X	X	X	X	X	X		
(10)		State the effect of hypoxia, smoking and altitude in excess of 5 000 ft on night vision.	X	X	X	X	X	X		
(11)		Explain the nature of colour blindness.	X	X	X	X	X	X		
		Binocular and monocular vision								
(12)		Distinguish between monocular	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		and binocular vision.								
(13)		Explain the basis of depth perception and its relevance to flight performance.	X	X	X	X	X	X		
(14)		List the possible monocular cues for depth perception.	X	X	X	X	X	X		
(15)		State that for high-energy blue light and UV rays, sunglasses can prevent damage to the retina.	X	X	X	X	X	X		
		Defective vision								
(16)		Explain long-sightedness, short-sightedness and astigmatism.	X	X	X	X	X	X		
(17)		List the causes of and the precautions that may be taken to reduce the probability of vision loss due to: — presbyopia; — cataract; — glaucoma.	X	X	X	X	X	X		
(18)		List the types of sunglasses that could cause perceptional problems in flight.	X	X	X	X	X	X		
(19)		List the measures that may be taken to protect oneself from flash blindness.	X	X	X	X	X	X		
(20)		State the possible problems associated with contact lenses.	X	X	X	X	X	X		
(21)		State the current rules/regulations governing the wearing of corrective spectacles and contact lenses when operating as a pilot.	X	X	X	X	X	X		
(22)		Explain the significance of the ‘blind spot’ on the retina in detecting other traffic in flight.	X	X	X	X	X	X		
040 02 02 04		Hearing								
		Descriptive and functional anatomy								
(01)		State the basic parts and functions of the outer, the middle and the inner ear.	X	X	X	X	X	X		
(02)		Differentiate between the functions of the vestibular apparatus and the cochlea in the inner ear.	X	X	X	X	X	X		
(03)		Hearing loss Define the main causes of the	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		following hearing defects/loss: — ‘conductive deafness’; — ‘noise-induced hearing loss’ (NIHL); — ‘presbycusis’.								
(04)		Summarise the effects of environmental noise on hearing.	X	X	X	X	X	X		
(05)		State the decibel level of received noise that will cause NIHL.	X	X	X	X	X	X		
(06)		Identify the potential occupational risks that may cause hearing loss.	X	X	X	X	X	X		
(07)		List the main sources of hearing loss in the flying environment.	X	X	X	X	X	X		
(08)		List the precautions that may be taken to reduce the probability of onset of hearing loss.	X	X	X	X	X	X		
040 02 02 05		Equilibrium								
		Functional anatomy								
(01)		List the main elements of the vestibular apparatus.	X	X	X	X	X	X		
(02)		State the functions of the vestibular apparatus on the ground and in flight.	X	X	X	X	X	X		
(03)		Distinguish between the component parts of the vestibular apparatus in the detection of linear and angular acceleration as well as on gravity.	X	X	X	X	X	X		
(04)		Explain how the semicircular canals are stimulated.	X	X	X	X	X	X		
		Motion sickness								
(05)		Describe air sickness and its accompanying symptoms.	X	X	X	X	X	X	X	
(06)		List the causes of air sickness.	X	X	X	X	X	X	X	
(07)		Describe the necessary actions to be taken to counteract the symptoms of air sickness.	X	X	X	X	X	X		
040 02 02 06		Integration of sensory inputs								
(01)		State the interaction between vision, equilibrium, proprioception and hearing to obtain spatial orientation in flight.	X	X	X	X	X	X	X	
(02)		Define the term ‘illusion’.	X	X	X	X	X	X	X	
(03)		Give examples of visual illusions based on shape constancy, size	X	X	X	X	X	X	X	

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
		constancy, aerial perspective, atmospheric perspective, the absence of focal or ambient cues, autokinesis, vectional false horizons, field myopia, and surface planes.								
(04)		Relate these illusions to problems that may be experienced in flight and identify the danger attached to them.	X	X	X	X	X	X	X	
(05)		List approach and landing illusions for slope of the runway, black-hole approach, and terrain around runway, and state the danger involved with recommendations to avoid or counteract the problems with high or low approach or flare at the wrong time.	X	X	X	X	X	X	X	
(06)		State the problems associated with flickering lights (strobe lights, anti-collision lights, propellers and rotors under certain light conditions, etc.).	X	X	X	X	X	X	X	
(07)		Describe vestibular illusions caused by the angular accelerations (the Leans, Coriolis) and linear accelerations (somatogravic, G-effect).	X	X	X	X	X	X	X	
(08)		Relate the above-mentioned vestibular illusions to problems encountered in flight and state the dangers involved.	X	X	X	X	X	X	X	
(09)		State that the 'seat-of-the-pants' sense is completely unreliable when visual contact with the ground is lost or when flying in instrument meteorological conditions (IMC) or with a poor visual horizon.	X	X	X	X	X	X	X	
(10)		Differentiate between vertigo, Coriolis effect, and spatial disorientation.	X	X	X	X	X	X	X	
(11)		List the measures to prevent or overcome spatial disorientation.	X	X	X	X	X	X	X	
040 02 03 00		Health and hygiene								
040 02 03 01		Intentionally left blank								
040 02 03 02		Body rhythm and sleep								

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
(01)		Name some internal body rhythms and their relevance to sleep. Explain that the most important of which is body temperature.	X	X	X	X				
(02)		Explain the term ‘circadian rhythm’.	X	X	X	X	X			
(03)		State the approximate duration of a ‘free-running’ rhythm.	X	X	X	X	X			
(04)		Explain the significance of the ‘internal clock’ in regulating the normal circadian rhythm.	X	X	X	X	X			
(05)		State the effect of the circadian rhythm of body temperature on an individual’s performance standard and on an individual’s sleep patterns.	X	X	X	X	X			
(06)		List and describe the stages of a sleep cycle.	X	X	X	X	X			
(07)		Differentiate between rapid eye movement (REM) and non- REM sleep.	X	X	X	X	X			
(08)		Explain the function of sleep and describe the effects of insufficient sleep on performance.	X	X	X	X	X			
(09)		Explain the simple calculations for the sleep/wake credit/debit situation.	X	X	X	X	X			
(10)		Explain how sleep debit can become cumulative.	X	X	X	X	X			
(11)		State the time formula for the adjustment of body rhythms to the new local time scale after crossing time zones.	X	X	X	X	X			
(12)		State the problems caused by circadian disrhythmia (jet lag) with regard to an individual’s performance and sleep.	X	X	X	X	X			
(13)		Differentiate between the effects of westbound and eastbound travel.	X	X	X	X	X			
(14)		Explain the interactive effects of circadian rhythm and vigilance on a pilot’s performance during flight as the duty day elapses.	X	X	X	X	X			
(15)		Describe the main effects of lack of sleep on an individual’s performance.	X	X	X	X	X			
(16)		List the possible strategies to cope with jet lag.	X	X	X	X	X			

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
040 02 03 03		Problem areas for pilots								
		Common minor ailments								
(01)		State the role of the Eustachian tube in equalising pressure between the middle ear and the environment.	X	X	X	X	X	X		
(02)		State that the in-flight environment may increase the severity of symptoms which may be minor while on the ground.	X	X	X	X	X	X		
(03)		List the negative effects of suffering from colds or flu on flight operations especially with regard to the middle ear, the sinuses, and the teeth.	X	X	X	X	X	X		
(04)		State when a pilot should seek medical advice from an aero-medical examiner (AME) or aero-medical centre (AeMC).	X	X	X	X	X	X		
(05)		Describe the measures to prevent or clear problems due to pressure changes during flight.	X	X	X	X	X	X		
		Entrapped gases and barotrauma								
(06)		Define ‘barotrauma’.	X	X	X	X	X	X		
(07)		Differentiate between otic, sinus, gastrointestinal and aerodontalgia (of the teeth) barotraumas and explain avoidance strategies.	X	X	X	X	X	X		
(08)		Explain why the effects of otic barotrauma can be worse in the descent.	X	X	X	X	X	X		
		Gastrointestinal upsets								
(09)		State the effects of gastrointestinal upsets that may occur during flight.	X	X	X	X	X	X		
(10)		List the precautions that should be observed to reduce the occurrence of gastrointestinal upsets.	X	X	X	X	X	X		
(11)		Indicate the major sources of gastrointestinal upsets.	X	X	X	X	X	X		
		Obesity								
(12)		Define ‘obesity’.	X	X	X	X	X	X		
(13)		State the following harmful effects obesity can cause: — possibility of developing coronary problems; — increased chances of	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		developing diabetes; — reduced ability to withstand G-forces; — development of problems with the joints of the limbs; — general circulatory problems; — reduced ability to cope with hypoxia or decompression sickness; — sleep apnoea.								
(14)		Describe the problems associated with Type 2 (mostly adult) diabetes: — risk factors; — insulin resistance; — complications (vascular, neurological) and the consequences for the medical licence; — pilots are not protected from Type 2 diabetes more than other people.	X	X	X	X	X	X		
(15)		Describe the typical back problems (unspecific back pain, slipped disc) that pilots have. Explain also the ways of preventing and treating these problems: — good sitting posture; — lumbar support; — good physical condition; — in-flight exercise, if possible; — physiotherapy.	X	X	X	X	X	X		
		Food hygiene								
(16)		Stress the importance of and methods to be adopted by aircrew, especially when travelling abroad, to avoid contaminated food and liquids.	X	X	X	X	X	X		
(17)		List the major contaminating sources in foodstuffs.	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
(18)		State the major constituents of a healthy diet.	X	X	X	X	X	X		
(19)		State the measure to avoid hypoglycaemia.	X	X	X	X	X	X		
(20)		State the importance of adequate hydration.	X	X	X	X	X	X		
		Tropical climates								
(21)		List the problems associated with operating in tropical climates.	X	X	X	X	X			
(22)		State the possible causes/sources of incapacitation in tropical countries with reference to: — standards of hygiene; — quality of water supply; — insectborne diseases; — parasitic worms; — rabies or other diseases that may be spread throughcontact with animals; — sexually transmitted diseases.	X	X	X	X	X			
(23)		State the precautions to be taken to reduce the risks of developing problems in tropical areas.	X	X	X	X	X			
		Infectious diseases								
(24)		State the major infectious diseases that may severely incapacitate or kill individuals.	X	X	X	X	X	X		
(25)		State the precautions that must be taken to ensure that disease-carrying insects are not transported between areas.	X	X	X	X	X	X		
040 02 03 04		Intoxication								
		Tobacco								
(01)		State the harmful effects of tobacco on: — the respiratory system; — the cardiovascular system; — the ability to resist hypoxia; — the ability to withstand G-forces; — night vision.	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		Caffeine								
(02)		Indicate the level of caffeine dosage at which performance is degraded.	X	X	X	X	X	X		
(03)		Besides coffee, indicate other beverages containing caffeine.	X	X	X	X	X	X		
		Alcohol								
(04)		State the maximum acceptable limit of alcohol for flight crew according to the applicable regulations.	X	X	X	X	X	X		
(05)		State the effects of alcohol consumption on: — the ability to reason; — inhibitions and self-control; — vision; — the sense of balance and sensory illusions; — sleep patterns; — hypoxia.	X	X	X	X	X	X		
(06)		State the effects alcohol may have if consumed together with other drugs.	X	X	X	X	X	X		
(07)		List the signs and symptoms of alcoholism.	X	X	X	X	X	X		
(08)		List the factors that may be associated with the development of alcoholism.	X	X	X	X	X	X		
(09)		Define the ‘unit’ of alcohol and state the approximate elimination rate from the blood.	X	X	X	X	X	X		
(10)		State the maximum daily and weekly intake of units of alcohol which may be consumed without causing damage to the organs and systems of the human body.	X	X	X	X	X	X		
(11)		Discuss the actions that might be taken if a crew member is suspected of being an alcoholic.	X		X	X				
		Prescription and non-prescription drugs and self-medication								
(12)		State the dangers associated with the use of non-prescription drugs.	X	X	X	X	X	X		
(13)		State the side effects of common non-prescription drugs used to treat colds, flu, hay fever and	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		other allergies, especially medicines containing antihistamine preparations.								
(14)		Interpret the rules relevant to using (prescription or non-prescription) drugs that the pilot has not used before.	X	X	X	X	X	X		
(15)		Interpret the general rule that 'if a pilot is so unwell that they require any medication, then they should consider themselves unfit to fly'.	X	X	X	X	X	X		
		Toxic materials								
(16)		List those materials present in an aircraft which may, when uncontained, cause severe health problems.	X	X	X	X	X	X		
(17)		List those aircraft-component parts which if burnt may give off toxic fumes.	X	X	X	X	X	X		
(18)		Describe a fume event and the possible incapacitating effects on those exposed to it.	X	X	X	X	X	X		
040 02 03 05		Incapacitation in flight								
(01)		State that incapacitation is most dangerous when its onset is insidious.	X	X	X	X	X	X		
(02)		List the major causes of in-flight incapacitation.	X	X	X	X	X	X		
(03)		State the importance of crew to be able to recognise and promptly react upon incapacitation of other crew members, should it occur in flight.	X		X	X				
(04)		Explain methods and procedures to cope with incapacitation in flight.	X	X	X	X	X	X		
040 03 00 00		BASIC AVIATION PSYCHOLOGY								
040 03 01 00		Human information processing								
040 03 01 01		Attention and vigilance								
(01)		Differentiate between 'attention' and 'vigilance'.	X	X	X	X	X	X		
(02)		Differentiate between 'selective' and 'divided' attention.	X	X	X	X	X	X		
(03)		Define 'hypovigilance'.	X	X	X	X	X	X		
(04)		Identify the factors that may affect the state of vigilance.	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
(05)		List the factors that may forestall hypovigilance during flight.	X	X	X	X	X	X		
(06)		Indicate the signs of reduced vigilance.	X	X	X	X	X	X		
(07)		List the factors that affect a person's level of attention.	X	X	X	X	X	X		
040 03 01 02		Perception								
(01)		Name the basis of the perceptual process.	X	X	X	X	X	X		
(02)		Describe the mechanism of perception ('bottom-up'/'top-down' process).	X	X	X	X	X	X		
(03)		Illustrate why perception is subjective and state the relevant factors that influence interpretation of perceived information.	X	X	X	X	X	X		
(04)		Describe some basic perceptual illusions.	X	X	X	X	X	X		
(05)		Illustrate some basic perceptual concepts.	X	X	X	X	X	X		
(06)		Give examples where perception plays a decisive role in flight safety.	X	X	X	X	X	X		
(07)		Stress how persuasive and believable mistaken perception can manifest itself both for an individual and a group.	X	X	X	X	X	X		
040 03 01 03		Memory								
(01)		Explain the link between the types of memory (to include sensory, working/short-term and long-term memory).	X	X	X	X	X	X		
(02)		Describe the differences between the types of memory in terms of capacity and retention time.	X	X	X	X	X	X		
(03)		Justify the importance of sensory-store memories in processing information.	X	X	X	X	X	X		
(04)		State the average maximum number of separate items that may be held in working memory (5 ± 2).	X	X	X	X	X	X		
(05)		Stress how interruption can affect short-term/working memory.	X	X	X	X	X	X		
(06)		Give examples of items that are important for pilots to hold in working memory during flight.	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
(07)		Describe how the capacity of the working-memory store may be increased.	X	X	X	X	X	X		
(08)		State the subdivisions of long-term memory and give examples of their content.	X	X	X	X	X	X		
(09)		Explain that skills are kept primarily in the long-term memory.	X	X	X	X	X	X		
(10)		Describe amnesia and how it affects memory.	X	X	X	X	X	X		
(11)		Name the common problems with both the long- and short- term memories and the best methods to try to counteract them.	X	X	X	X	X	X		
040 03 01 04		Response selection								
		Learning principles and techniques								
(01)		Explain and distinguish between the following basic forms of learning: — classic and operant conditioning (behaviouristic approach); — learning by insight (cognitive approach); — learning by imitating (modelling).	X	X	X	X	X	X		
(02)		Recognise pilot-related examples as behaviouristic, cognitive or modelling forms of learning.	X	X	X	X	X	X		
(03)		State the factors that are necessary for and promote the quality of learning: — intrinsic motivation; — good mental health; — rehearsals for improvement of memory; — consciousness; — vigilance; — application in practical exercises.	X	X	X	X	X	X		
(04)		Explain ways to facilitate the memorisation of information with the following learning techniques:	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		— mnemonics; — mental training.								
(05)		Describe the advantage of planning and anticipation of future actions: — define the term ‘skills’; — state the three phases of learning a skill (Anderson: cognitive, associative and autonomous phase).	X	X	X	X	X	X		
(06)		Explain the term ‘motor programme’ or ‘mental schema’.	X	X	X	X	X	X		
(07)		Describe the advantages and disadvantages of mental schemas.	X	X	X	X	X	X		
(08)		Explain the Rasmussen model which describes the guidance of a pilot’s behaviour in different situations.	X	X	X	X	X	X		
(09)		State the possible problems or risks associated with skill-, rule- and knowledge-based behaviour.	X	X	X	X	X	X		
		Motivation								
(10)		Define ‘motivation’.	X	X	X	X	X	X		
(11)		Explain the relationship between motivation and learning.	X	X	X	X	X	X		
(12)		Explain the problems of over-motivation, especially in the context of the extreme need to achieve.	X	X	X	X	X	X		
040 03 02 00		Human error and reliability								
040 03 02 01		Reliability of human behaviour								
(01)		Name and explain the factors that influence human reliability.	X	X	X	X	X	X		
040 03 02 02		Mental models and situation awareness								
(01)		Define the term ‘situation awareness’.	X	X	X	X	X	X	X	
(02)		List the cues that indicate loss of situation awareness and name the steps to regain it.	X	X	X	X	X	X	X	
(03)		List the factors that influence one’s situation awareness both positively and negatively, and stress the importance of situation awareness in the context of flight	X	X	X	X	X	X	X	

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		safety.								
(04)		Define the term ‘mental model’ in relation to a surrounding complex situation.	X	X	X	X	X	X	X	
(05)		Describe the advantages/disadvantages of mental models.	X	X	X	X	X	X	X	
(06)		Explain the relationship between personal ‘mental models’ and the creation of cognitive illusions.	X	X	X	X	X	X	X	
040 03 02 03		Theory and model of human error								
(01)		Explain the concept of the ‘error chain’.	X	X	X	X	X	X	X	
(02)		Differentiate between an isolated error and an error chain.	X	X	X	X	X	X	X	
(03)		Distinguish between the main forms/types of errors (i.e. slips, faults, omissions and violations).	X	X	X	X	X	X	X	
(04)		Discuss the above errors and their relevance in flight.	X	X	X	X	X	X	X	
(05)		Distinguish between an active and a latent error, and give examples.	X	X	X	X	X	X	X	
040 03 02 04		Error generation								
(01)		Distinguish between internal and external factors in error generation.	X	X	X	X	X	X	X	
(02)		Identify possible sources of internal error generation.	X	X	X	X	X	X	X	
(03)		Define and discuss the two errors associated with motor programmes (action slip and environmental capture).	X	X	X	X	X	X	X	
(04)		List the three main sources of external error generation in the flight crew compartment.	X	X	X	X	X	X	X	
(05)		Give examples to illustrate the following factors in external error generation in the flight crew compartment: — ergonomics; — economics; — social environment.	X	X	X	X	X	X	X	
(06)		Name the major goals in the design of human-centred human–machine interfaces.	X	X	X	X	X	X	X	

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
(07)		Define the term 'error tolerance'.	X	X	X	X	X	X	X	
(08)		List and describe the strategies that are used to reduce human error.	X	X	X	X	X	X	X	
(09)		Describe the advantage of planning and the anticipation of future actions.	X	X	X	X	X	X	X	
040 03 03 00		Decision-making								
040 03 03 01		Decision-making concepts								
(01)		Define the terms 'deciding' and 'decision-making'.	X	X	X	X	X	X	X	
(02)		Describe the major factors on which decision-making should be based during the course of a flight.	X	X	X	X	X	X	X	
(03)		Describe the main human attributes with regard to decision-making.	X	X	X	X	X	X	X	
(04)		Discuss the nature of bias and its influence on the decision- making process.	X	X	X	X	X	X	X	
(05)		Describe the main error sources and limits in an individual's decision-making mechanism.	X	X	X	X	X	X	X	
(06)		State the factors upon which an individual's risk assessment is based.	X	X	X	X	X	X	X	
(07)		Explain the relationship between risk assessment, commitment and pressure of time in decision-making strategies.	X	X	X	X	X	X	X	
(08)		Explain the risks associated with dispersion or channelised attention during the application of procedures requiring a high workload within a short time frame (e.g. a go-around).	X	X	X	X	X	X		
(09)		Describe the positive and negative influences exerted by other group members on an individual's decision-making process (risky shift).	X	X	X	X	X	X	X	
(10)		Explain the general idea behind the creation of a model for decision-making based upon: — definition of the aim; — collection of information;	X	X	X	X	X	X	X	

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		— risk assessment; — development of options; — evaluation of options; — decision; — implementation; — consequences; — review and feedback.								
040 03 04 00		Avoiding and managing errors: cockpit management								
040 03 04 01		Safety awareness								
(01)		Justify the need for being aware of not only one's own performance but that of others before and during a flight and the possible consequences or risks.	X	X	X	X	X	X	X	
040 03 04 02		Coordination (multi-crew concepts)								
(01)		Name the objectives of the multi-crew concept.	X		X	X				
(02)		State and explain the elements of multi-crew concepts.	X		X	X				
(03)		Describe the concepts of 'standard operating procedures' (SOPs), checklists and crew briefings.	X	X	X	X	X			
(04)		Describe the purpose of and procedure for crew briefings.	X		X	X				
(05)		Describe the purpose of and procedure for checklists.	X	X	X	X	X			
(06)		Describe the function of communication in a coordinated team.	X		X	X				
(07)		Explain the advantages of SOPs.	X	X	X	X	X			
(08)		Explain how SOPs contribute to avoiding, reducing and managing threats and errors.	X	X	X	X	X			
(09)		Explain potential threats of SOPs, for example during company or type conversion (e.g. motor programmes, company culture, hazardous attitudes, developed habits).	X	X	X	X	X			
040 03 04 03		Cooperation								
(01)		Distinguish between cooperation	X	X	X	X	X			

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		and coaction.								
(02)		Define the term ‘group’.	X	X	X	X	X			
(03)		Illustrate the influence of interdependence in a group.	X	X	X	X	X			
(04)		List the advantages and disadvantages of teamwork.	X	X	X	X	X			
(05)		Explain the term ‘synergy’.	X	X	X	X	X			
(06)		Define the term ‘cohesion’.	X	X	X	X	X			
(07)		Define the term ‘groupthink’.	X	X	X	X	X			
(08)		State the essential conditions for good teamwork.	X	X	X	X	X			
(09)		Explain the function of role and norm in a group.	X	X	X	X	X			
(10)		Name the different role patterns which occur in a group situation.	X	X	X	X	X			
(11)		Explain how behaviour can be affected by the following factors: — persuasion; — conformity; — compliance; — obedience.	X	X	X	X	X			
(12)		Distinguish between status and role.	X	X	X	X	X			
(13)		Stress the inherent dangers of a situation where there is a mix of role and status within the flight crew compartment.	X	X	X	X	X			
(14)		Explain the terms ‘leadership’ and ‘followership’.	X	X	X	X	X			
(15)		Describe the trans-cockpit authority gradient and its affiliated leadership styles (i.e. autocratic, laissez-faire and synergistic).	X	X	X	X	X			
(16)		Name the most important attributes of a positive leadership style.	X	X	X	X	X			
040 03 04 04		Communication								
(01)		Define the term ‘communication’.	X	X	X	X	X	X		
(02)		List the most basic components of interpersonal communication.	X	X	X	X	X	X		
(03)		Explain the advantages of in-person two-way communication as opposed to one-way communication.	X	X	X	X	X	X		
(04)		Intentionally left blank								
(05)		Name the importance of non-	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		verbal communication.								
(06)		Describe the general aspects of non-verbal communication.	X	X	X	X	X	X		
(07)		Describe the advantages/disadvantages of implicit and explicit communication.	X	X	X	X	X	X		
(08)		Describe the advantages and possible problems of using 'social' and 'professional' language in high- and low-workload situations.	X	X	X	X	X	X		
(09)		Name and explain the major obstacles to effective communication.	X	X	X	X	X	X		
(10)		Explain the difference between intrapersonal and interpersonal conflict.	X	X	X	X	X	X		
(11)		Describe the escalation process in human conflict.	X	X	X	X	X	X		
(12)		List the typical consequences of conflicts between crew members.	X	X	X	X	X	X		
(13)		Explain the following terms as part of the communication practice with regard to preventing or resolving conflicts: — inquiry; — active listening; — advocacy; — feedback; — metacommunication; — negotiation.	X	X	X	X	X	X		
(14)		Describe the limitations of communication in situations of high workload in the flight crew compartment in view of listening, verbal, non-verbal and visual effects.	X	X	X	X	X	X		
040 03 05 00		Human behaviour								
040 03 05 01		Personality, attitude and behaviour								
(01)		Describe the factors that determine an individual's behaviour.	X	X	X	X	X	X		
(02)		Define and distinguish between 'personality', 'attitude' and 'behaviour'.	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
(03)		State the origin of personality and attitude.	X	X	X	X	X	X		
(04)		State that with behaviour good and bad habits can be formed.	X	X	X	X	X	X		
(05)		Explain how behaviour is generally a product of personality, attitude and the environment to which one was exposed at significant moments (childhood, schooling and training).	X	X	X	X	X	X		
(06)		State that personality differences and selfish attitude may have effects on flight crew performance.	X	X	X	X	X	X		
040 03 05 02		Individual differences in personality and motivation								
(01)		Describe the individual differences in personality by means of a common trait model (e.g. Eysenck's personality factors) and use it to describe today's ideal pilot.	X	X	X	X	X	X		
		Self-concept								
(02)		Define the term 'self-concept' and the role it plays in any change of personality.	X	X	X	X	X	X		
(03)		Explain how a self-concept of underconfidence may lead to an outward show of aggression and self- assertiveness.	X	X	X	X	X	X		
		Self-discipline								
(04)		Define 'self-discipline' and justify its importance for flight safety.	X	X	X	X	X	X		
040 03 05 03		Identification of hazardous attitudes (error proneness)								
(01)		Explain dangerous attitudes in aviation: — anti-authority; — macho; — impulsivity; — invulnerability; — complacency; — resignation.	X	X	X	X	X			
(02)		Describe the personality, attitude and behaviour patterns of an ideal crew member.	X	X	X	X	X			

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
(03)		Summarise how a person's attitude influences their work in the flight crew compartment.	X	X	X	X	X			
040 03 06 00		Human overload and underload								
040 03 06 01		Arousal								
(01)		Explain the term 'arousal'.	X	X	X	X	X	X		
(02)		Describe the relationship between arousal and performance.	X	X	X	X	X	X		
(03)		Explain the circumstances under which underload may occur and its possible dangers.	X	X	X	X	X	X		
040 03 06 02		Stress								
(01)		Explain the term 'stress' and why stress is a natural human reaction.	X	X	X	X	X	X		
(02)		State that the physiological response to stress is generated by the 'fight or flight' response.	X	X	X	X	X	X		
(03)		Describe the function of the autonomic nervous system (ANS) in stress response.	X	X	X	X	X	X		
(04)		Explain the relationship between arousal and stress.	X	X	X	X	X	X		
(05)		State the relationship between stress and performance.	X	X	X	X	X	X	X	
(06)		State the basic categories of stressors.	X	X	X	X	X	X	X	
(07)		List and discuss the major environmental sources of stress in the flight crew compartment.	X	X	X	X	X	X	X	
(08)		Discuss the concept of 'break point' with regard to stress, overload and performance.	X	X	X	X	X	X	X	
(09)		Name the principal causes of domestic stress.	X	X	X	X	X	X		
(10)		State that the stress experienced as a result of particular demands varies among individuals.	X	X	X	X	X	X		
(11)		Explain the factors that lead to differences in the levels of stress experienced by individuals.	X	X	X	X	X	X	X	
(12)		List the factors that influence the tolerance of stressors.	X	X	X	X	X	X		
(13)		State that stress is a result of perceived demands and perceived ability.	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
(14)		Explain the relationship between stress and anxiety.	X	X	X	X	X	X	X	
(15)		Describe the effects of anxiety on human performance.	X	X	X	X	X	X	X	
(16)		State the general effect of acute stress on people.	X	X	X	X	X	X	X	
(17)		Describe the relationship between stress, arousal and vigilance.	X	X	X	X	X	X		
(18)		State the general effect of chronic stress and the biological reaction by means of the three stages of the general adaptation syndrome (Selye): alarm, resistance, and exhaustion.	X	X	X	X	X	X		
(19)		Explain the differences between psychological, psychosomatic and somatic stress reactions.	X	X	X	X	X	X		
(20)		Name the typical common physiological and psychological symptoms of human overload.	X	X	X	X	X	X		
(21)		Describe the effects of stress on human behaviour.	X	X	X	X	X	X		
(22)		Explain how stress is cumulative and how stress from one situation can be transferred to a different situation.	X	X	X	X	X	X	X	
(23)		Explain how successful completion of a stressful task will reduce the amount of stress experienced when a similar situation arises in the future.	X	X	X	X	X	X	X	
(24)		Describe the effect of human underload/overload on effectiveness in the flight crew compartment.	X	X	X	X	X	X	X	
(25)		List sources and symptoms of human underload.	X	X	X	X	X	X	X	
040 03 06 03		Intentionally left blank								
040 03 06 04		Intentionally left blank								
040 03 06 05		Fatigue and stress management								
(01)		Explain the term ‘fatigue’ and differentiate between the two types of fatigue (short-term and chronic fatigue).	X	X	X	X	X	X		
(02)		Name the causes of short-term and chronic fatigue.	X	X	X	X	X	X		
(03)		Identify the symptoms and	X	X	X	X	X	X		

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL CPL		Helicopter ATPL/IR ATPL CPL			IR	CB-IR (A) and EIR	Remarks
		describe the effects of fatigue.								
(04)		List the strategies that prevent or delay the onset of fatigue and hypovigilance.	X	X	X	X	X	X		
(05)		List and describe strategies for coping with stress factors and stress reactions.	X	X	X	X	X	X		
(06)		Distinguish between short-term and long-term methods of stress management.	X	X	X	X	X	X		
(07)		Give examples of short-term methods of stress management.	X	X	X	X	X	X		
(08)		Give examples of long-term methods of coping with stress.	X	X	X	X	X	X		
(09)		Describe the fatique risk management system (FRMS) as follows: a data-driven means of continuously monitoring and managing fatigue-related safety risks, based upon scientific principles and knowledge as well as operational experience that aims to ensure relevant personnel are performing at adequate levels of alertness.	X	X	X	X	X	X		
040 03 07 00		Advanced cockpit automation								
040 03 07 01		Advantages and disadvantages								
(01)		Compare the two basic concepts of automation: — as per Boeing, where the pilot remains the last operator; — and as per Airbus, where automated systems can correct erroneous pilot action.	X	X	X	X	X	X	X	
(02)		Explain the fundamental restrictions of autoflight systems to be lack of creativity in unknown situations, and lack of personal motivation with regard to safety.	X	X	X	X	X	X	X	
(03)		List the principal strengths and weaknesses of pilot versus autopilot systems to be creativity, decision-making, prioritisation of tasks, safety attitude versus precision, reliability.	X	X	X	X	X	X	X	
(04)		Explain the ‘ironies of automation’: designers’ errors due	X	X	X	X	X	X	X	

Syllabus	BK	Syllabus details and associated Learning Objectives	Aeroplane ATPL	CPL	Helicopter ATPL/IR	ATPL	CPL	IR	CB-IR (A) and EIR	Remarks
		to wrong interpretation of the data, leaving tasks to the pilot that are too complex to automate, loss of manual and cognitive skills of the pilot. State the necessity for regular training flights as one possible countermeasure.								
(05)		Describe methods to overcome the drawbacks of autoflight systems to be loss of manual flying capabilities, additional workload through programming, risk of slips during programming, and hypovigilance during cruise.	X	X	X	X	X	X	X	
040 03 07 02		Automation complacency								
(01)		State the main weaknesses in the monitoring of automatic systems to be hypovigilance during flight, and loss of flying skills.	X	X	X	X	X	X	X	
(02)		Explain some basic flight crew errors and terms that arise with the introduction of automation: — passive monitoring; — blinkered concentration; — confusion; — mode awareness.	X	X	X	X	X	X	X	
(03)		Explain how the method of call-outs counteracts ineffective monitoring of automatic systems.	X	X	X	X	X	X	X	
(04)		Define ‘complacency’.	X	X	X	X	X	X	X	
040 03 07 03		Working concepts								
(01)		Explain that the potential disadvantages of automation on crew communication are loss of awareness of input errors, flight modes, failure detection, failure comprehension, status of the aircraft and aircraft position.	X		X	X				
(02)		Explain how the negative effects of automation on pilots may be alleviated by degrading to a lower level of automation to recover comprehension of the flight status from VNAV/LNAV to ALT/HDG or even to manual flying.	X	X	X	X	X	X	X	
(03)		Interpret the role of automation	X	X	X	X	X	X	X	