

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
040 00 00 00	HUMAN PERFORMANCE					
040 01 00 00	HUMAN FACTORS: BASIC CONCEPTS					
040 01 01 00	Human Factors in aviation					
040 01 01 01	<i>Intentionally left blank</i>					
040 01 01 02	Becoming a competent pilot					
	LO Define the general classification of the factors to be considered in assessing the competency of any individual pilot (within the parameters of knowledge, skill and ability)	x	x	x	x	x
	LO Outline the factors in training that will ensure the future competency of the individual pilot	x	x	x	x	x
040 01 02 00	Accident statistics					
	LO Give an estimate of the accident rate in commercial aviation in comparison to other means of transport	x	x	x	x	x
	LO State in general terms the percentage of aircraft accidents which are caused by human factors and are commonly described as 'pilot error'	x	x	x	x	x
	LO Summarise the accident trend in modern aviation	x	x	x	x	x
	LO Identify the role of accident statistics in developing a strategy for future improvements to flight safety	x	x	x	x	x
	LO Name the most significant item of technical equipment introduced in the 1980's and 1990's which has contributed to the reduction of accidents	x	x	x	x	x
040 01 03 00	Flight safety concepts					
	LO Indicate the importance of error detection and list various methods of detection	x	x	x	x	x
	LO Explain the importance of error detection and list various methods of detection	x	x	x	x	x
	LO Describe and compare the elements of the SHELL model	x	x	x	x	x

Supprimé : Human Factors: basic concepts

Supprimé : Competence and limitations

Supprimé : x

Supprimé : x

Supprimé : x

Supprimé : x

Supprimé : x

Supprimé : x

Supprimé : the traditional approach towards 'proficiency'

... [1]

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
LO	Summarise the relevance of the SHELL model to work in the cockpit	x	x	x	x	x
LO	Analyse the interaction between the various components of the SHELL model	x	x	x	x	x
LO	Explain how the interaction between individual crew members can affect flight safety	x	x	x	x	x
LO	Identify and explain the interaction between flight crew and management as a factor in flight safety	x	x	x	x	x
040 02 00 00	BASIC AVIATION PHYSIOLOGY AND HEALTH MAINTENANCE					
040 02 01 00	Basics of flight physiology					
040 02 01 01	The Atmosphere					
LO	State the units used in measuring total and partial pressures of the gases in the atmosphere	x	x	x	x	x
LO	State in terms of % and mm Hg the values of Oxygen, Nitrogen and other gases present in the atmosphere	x	x	x	x	x
LO	State that the volume percentage of the gases in ambient air will remain constant for all altitudes at which conventional aircraft operate	x	x	x	x	x
LO	State the physiological significance of the following laws: - Boyle's Law - Dalton's Law - Henry's Laws - The General Gas Law	x	x	x	x	x
LO	State the ICAO standard temperature at Mean Sea Level and the Standard Temperature Lapse Rate	x	x	x	x	x
LO	State at what approximate altitudes in the standard atmosphere the atmospheric pressure will be ¼, ½ and ¾ of MSL pressure	x	x	x	x	x
LO	State the effects of increasing altitude on the overall pressure and partial pressures of the various gases in the atmosphere	x	x	x	x	x

- Supprimé : Basic aviation physiology and health maintenance
- Supprimé : Basics of flight physiology
- Supprimé : x
- Supprimé : x
- Supprimé : x
- Supprimé : x
- Supprimé : x
- Supprimé : x

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
LO	Explain the differences in gas expansion between alveolar and ambient air when climbing	x	x	x	x	x
LO	State the condition required for human beings to be able to survive at any given altitude	x	x	x	x	x
LO	State and explain the importance of partial pressure	x	x	x	x	x
040 02 01 02	Respiratory and circulatory systems					
LO	List the main components of the respiratory system and their function	x	x	x	x	x
LO	Identify the different volumes of air in the lungs and state the normal respiratory rate	x	x	x	x	x
LO	State how oxygen and carbon dioxide are transported throughout the body	x	x	x	x	x
LO	Explain the process by which oxygen is transferred to the tissues and carbon dioxide is eliminated from the body and the oxygen requirement of tissues	x	x	x	x	x
LO	Explain the role of carbon dioxide in the control and regulation of respiration	x	x	x	x	x
LO	Describe the basic processes of external respiration and internal respiration	x	x	x	x	x
LO	List the factors determining pulse rate	x	x	x	x	x
LO	Name the major components of the circulatory system and describe their function	x	x	x	x	x
LO	State the values for a normal pulse rate and the average cardiac output (heart rate x stroke volume) of an adult at rest	x	x	x	x	x
LO	Name the four chambers of the heart and state the function of the individual chambers	x	x	x	x	x
LO	Differentiate between arteries, veins, and capillaries in their structure and function	x	x	x	x	x
LO	State the functions of the coronary arteries and veins	x	x	x	x	x
LO	Define 'systolic' and 'diastolic' blood pressure	x	x	x	x	x
LO	State the normal blood pressure ranges and units of measurement	x	x	x	x	x
LO	Classify the effects of age on normal blood pressure range	x	x	x	x	x



JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	List the main constituents of the blood and describe their functions	x	x	x	x	x	x
LO	Stress the function of haemoglobin and the effects of acceleration on the circulatory system	x	x	x	x	x	x
LO	Define 'anaemia' and state its common causes	x	x	x	x	x	x
LO	Indicate the effect of increasing altitude on haemoglobin oxygen saturation	x	x	x	x	x	x
	Hypertension and Hypotension						
LO	Define 'hypertension' and 'hypotension'	x	x	x	x	x	x
LO	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
LO	State that both hypotension and hypertension may disqualify the pilot from obtaining a medical clearance to fly	x	x	x	x	x	x
LO	List the factors which can lead to hypertension in an individual	x	x	x	x	x	x
LO	State the corrective actions that may be taken to reduce high blood pressure	x	x	x	x	x	x
LO	Stress that hypertension is the major factor of 'strokes' in the general population	x	x	x	x	x	x
	Coronary artery disease						
LO	Differentiate between 'angina' and 'heart attack'.	x	x	x	x	x	x
LO	List the major factors that may make an individual vulnerable to a heart attack.	x	x	x	x	x	x
LO	State the techniques that may be used to control or reduce the effect of coronary disease.	x	x	x	x	x	x
LO	State the role played by physical exercise in reducing the chances of developing coronary disease	x	x	x	x	x	x
	Hypoxia						
LO	Define the two major forms of hypoxia (hypoxic and anaemic) and the common causes of both	x	x	x	x	x	x
LO	State why living tissues require oxygen	x	x	x	x	x	x

**JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures**

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
Subject – 040 – Human Performance
See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	State that healthy people are able to compensate for altitudes up to approximately 10,000 - 12,000 ft	x	x	x	x	x	x
LO	Name the three physiological thresholds and allocate the corresponding altitudes for each of them	x	x	x	x	x	x
LO	State the altitude at which short term memory begins to be affected by hypoxia	x	x	x	x	x	x
LO	Define the terms 'Time of Useful Consciousness' (TUC)	x	x	x	x	x	x
LO	State the TUC for 20,000 ft, 30,000 ft, 35,000 ft and 40,000 ft for a person at rest and 25,000 ft for a person who is moderately active	x	x	x	x	x	x
LO	Explain the dangers of flying above 10,000 ft without using additional oxygen or being in a pressurized cabin	x	x	x	x	x	x
LO	List the factors determining the severity of hypoxia	x	x	x	x	x	x
LO	State the precautions to be taken when giving blood	x	x	x	x	x	x
LO	State the equivalent altitudes when breathing ambient air and 100% oxygen for MSL and approximately 10,000 ft, 30,000 ft and 40,000 ft	x	x	x	x	x	x
	Hyperventilation						
LO	Describe the role of carbon dioxide in hyperventilation	x	x	x	x	x	x
LO	Describe the effects of hyperventilation on the acid-base balance of the blood	x	x	x	x	x	x
LO	Define the term 'hyperventilation'	x	x	x	x	x	x
LO	List the factors causing hyperventilation	x	x	x	x	x	x
LO	List the signs and symptoms of hyperventilation	x	x	x	x	x	x
LO	Describe the effects of hyperventilation on muscular coordination	x	x	x	x	x	x
LO	List measures which may be taken to counteract hyperventilation	x	x	x	x	x	x
	Decompression Sickness/Illness						

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	State the normal range of cabin pressure altitude in pressurised commercial aircraft and describe its protective function for aircrew and passengers	x	x	x	x	x	x
LO	Identify the causes of decompression sickness in flight operation	x	x	x	x	x	x
LO	State how decompression sickness can be prevented	x	x	x	x	x	x
LO	State the threshold for the onset of decompression sickness in terms of altitude	x	x	x	x	x	x
LO	State the approximate altitude above which DCS is likely to occur	x	x	x	x	x	x
LO	List the symptoms of decompression sickness	x	x	x	x	x	x
LO	Indicate how decompression sickness may be treated	x	x	x	x	x	x
LO	List the vital actions the crew has to perform when cabin pressurisation is lost	x	x	x	x	x	x
LO	Define the hazards of diving and flying and give the recommendations associated with these activities	x	x	x	x	x	x
	Acceleration						
LO	Define 'linear', 'angular' and 'radial acceleration'	x	x	x	x	x	x
LO	Describe the effects of acceleration on the circulation and blood volume distribution	x	x	x	x	x	x
LO	List the factors determining the effects of acceleration on the human body	x	x	x	x	x	x
LO	Describe measures which may be taken to increase tolerance to positive acceleration	x	x	x	x	x	x
LO	List the effects of positive acceleration with respect to type, sequence and the corresponding G-load	x	x	x	x	x	x
	Carbon Monoxide						
LO	State how carbon monoxide may be produced	x	x	x	x	x	x
LO	State how the presence of carbon monoxide in the blood affects the distribution of oxygen	x	x	x	x	x	x
LO	List the signs and symptoms of carbon monoxide poisoning	x	x	x	x	x	x

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
LO	Indicate how carbon monoxide poisoning can be treated and counter-measures that can be adopted	x	x	x	x	x
040 02 01 03	High altitude environment					
	Ozone					
LO	State how an increase in altitude may change the proportion of ozone in the atmosphere	x		x	x	
LO	List the possible harmful effects of ozone	x		x	x	
	Radiation					
LO	State the sources of radiation at high altitude	x		x	x	
LO	List the effects of excessive exposure to radiation	x		x	x	
LO	State the effect of sun storms on the amount of radiation at high altitude	x		x	x	
LO	List the harmful effects that may result from the extra radiation that may be generated as the result of a sun storm (solar flares)	x		x	x	
LO	List methods of reducing the above effects	x		x	x	
	Humidity					
LO	Define the terms 'humidity' and 'relative humidity'	x		x	x	
LO	List the factors which affect the relative humidity of both the atmosphere and cabin air	x		x	x	
LO	State the methods of reducing the effects of insufficient humidity	x		x	x	
LO	List the physiological effects of dry cabin air on the human body and indicate measures to diminish these effects. Stress the effects that low humidity can have on the efficient functioning of the eye	x		x	x	
	Extreme Temperatures					
LO	Explain the change in the need for oxygen of the human body when exposed to extreme environmental temperatures	x		x	x	

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
040 02 02 00	Man and Environment: the sensory system					
LO	List the different senses	X	X	X	X	X
LO	State the multi-sensory nature of human perception	X	X	X	X	X
040 02 02 01	Central, peripheral and autonomic nervous systems					
LO	Name the main parts of the central nervous system	X	X	X	X	X
LO	State the basic functions of the Central Nervous System (CNS), the Peripheral Nervous System (PNS) and the Autonomic (Vegetative) System (ANS)	X	X	X	X	X
LO	Discuss broadly how information is processed by the nervous systems and the role of reflexes	X	X	X	X	X
LO	Define the division of the peripheral nerves into sensory and motor nerves	X	X	X	X	X
LO	State that a nerve impulse is an electro-chemical phenomenon	X	X	X	X	X
LO	Define the term 'sensory threshold'	X	X	X	X	X
LO	Define the term 'sensitivity', especially in the context of vision	X	X	X	X	X
LO	Give examples of sensory adaptation (habituation)	X	X	X	X	X
LO	Define the term 'habituation' and state its implication for flight safety	X	X	X	X	X
LO	Define biological control systems as neuro-hormonal processes that are highly self regulated in the normal environment	X	X	X	X	X
040 02 02 02	Vision					
	Functional anatomy					
LO	Name the most important parts of the eye and the pathway to the visual cortex	X	X	X	X	X
LO	State the basic functions of the parts of the eye	X	X	X	X	X
LO	Define 'accommodation'	X	X	X	X	X

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES

Subject – 040 – Human Performance

See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	Distinguish between the functions of the rod and cone cells	x	x	x	x	x	x
LO	Describe the distribution of rod and cone cells in the retina and explain their relevance on vision	x	x	x	x	x	x
	Visual foveal and peripheral vision						
LO	Explain the terms 'visual acuity', 'visual field', 'central vision', 'peripheral vision', 'fovea' and explain their function in the process of vision	x	x	x	x	x	x
LO	List the factors which may degrade visual acuity and the importance of 'lookout'	x	x	x	x	x	x
LO	State the limitations of night vision and the different scanning techniques by both night and day (regularly spaced eye movements each covering an overlapping sector of about 10°)	x	x	x	x	x	x
LO	Explain the adaptation mechanism in vision to cater for reduced and increased levels of illumination	x	x	x	x	x	x
LO	State the time necessary for the eye to adapt both to the dark and bright light	x	x	x	x	x	x
LO	State the effect of hypoxia and smoking on night vision	x	x	x	x	x	x
LO	Explain the nature of colour blindness and the significance of the 'blind spot' on the retina in detecting other traffic in flight	x	x	x	x	x	x
	Binocular and monocular vision						
LO	Distinguish between monocular and binocular vision	x	x	x	x	x	x
LO	Explain the basis of depth perception and its relevance to flight performance	x	x	x	x	x	x
LO	List possible monocular cues for depth perception	x	x	x	x	x	x
LO	State the problems of vision associated with higher energy blue light and ultra violet rays	x	x	x	x	x	x
	Defective vision						

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	List the major causes of defective vision in: - Long sightedness (Hypermetropia) - Short sightedness (Myopia)	x	x	x	x	x	x
LO	List the causes of and the precautions that may be taken to reduce the probability of vision loss due to: - Presbyopia - Cataracts - Glaucoma - Astigmatism	x	x	x	x	x	x
LO	State the corrective action necessary to compensate for defective vision	x	x	x	x	x	x
LO	List the types of sunglasses which could cause perceptual problems in flight	x	x	x	x	x	x
LO	List the measures which may be taken to protect oneself from flash-blindness	x	x	x	x	x	x
LO	List the measures which may be taken to protect oneself from flash-blindness	x	x	x	x	x	x
LO	State the possible problems associated with contact lenses	x	x	x	x	x	x
LO	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
040 02 02 03	Hearing						
	<i>Descriptive and functional anatomy</i>						
LO	State the audible range of the human ear	x	x	x	x	x	x
LO	State the unit of measure for the intensity of sound	x	x	x	x	x	x
LO	Name the most important parts of the ear and the associated neural pathway	x	x	x	x	x	x
LO	State the basic functions of the different parts of the auditory system	x	x	x	x	x	x
LO	Differentiate between the functions of the vestibular apparatus and the cochlea in the inner ear	x	x	x	x	x	x

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	State the role of the Eustachian tube in equalizing pressure between the middle ear and the environment	x	x	x	x	x	x
LO	Indicate the effects of colds or flu on the ability to equalize pressure in the above	x	x	x	x	x	x
	Hearing loss						
LO	Define the main causes of the following hearing defects /loss: - 'Conductive deafness' - 'Noise Induced Hearing Loss' (NIHL) - 'Presbycusis'	x	x	x	x	x	x
LO	Summarise the effects of environmental noise on hearing	x	x	x	x	x	x
LO	State the decibel level of received noise that will cause NIHL	x	x	x	x	x	x
LO	Indicate the factors, other than noise level, which may lead to NIHL	x	x	x	x	x	x
LO	Identify the potential occupational risks which may cause hearing loss	x	x	x	x	x	x
LO	List the main sources of hearing loss in the flying environment	x	x	x	x	x	x
LO	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 04	Equilibrium						
	Functional Anatomy						
LO	List the main elements of the vestibular apparatus	x	x	x	x	x	x
LO	State the functions of the vestibular apparatus on the ground and in flight	x	x	x	x	x	x
LO	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
LO	Explain how the semicircular canals are stimulated	x	x	x	x	x	x

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
	Motion sickness					
LO	Describe air-sickness and its accompanying symptoms	X	X	X	X	X
LO	Indicate that vibration can cause undesirable human responses because of the resonance of the skull and the eyeballs.	X	X	X	X	X
LO	List the causes of motion sickness	X	X	X	X	X
LO	Describe the necessary actions to be taken to counteract the symptoms of motion sickness	X	X	X	X	X
040 02 02 05	Integration of sensory inputs					
LO	State the interaction between vision, equilibrium, proprioception and hearing to obtain spatial orientation in flight	X	X	X	X	X
LO	Define the term 'illusion'	X	X	X	X	X
LO	Give examples of visual illusions based on shape constancy, size constancy, aerial perspective, atmospheric perspective, the absence of focal or ambient cues, autokinesis, vectional false horizons and surface planes	X	X	X	X	X
LO	Relate these illusions to problems that may be experienced in flight and identify the danger attached to them	X	X	X	X	X
LO	State the conditions which cause the 'black hole' effect and 'empty field myopia'	X	X	X	X	X
LO	Give examples of approach and landing illusions, state the danger involved and give recommendations to avoid or counteract these problems	X	X	X	X	X
LO	State the problems associated with flickering lights (strobe-lights, anti-collision lights, etc.)	X	X	X	X	X
LO	Give examples of vestibular illusions such as Somatogyral (the Leans), Coriolis, Somatogravic and g- effect illusions	X	X	X	X	X
LO	Relate the above mentioned vestibular illusions to problems encountered in flight and state the dangers involved	X	X	X	X	X

**JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures**

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
Subject – 040 – Human Performance
See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
LO	List and describe the function of the proprioceptive senses ('Seat-of-the Pants-Sense')	x	x	x	x	x
LO	Relate illusions of the proprioceptive senses to the problems encountered during flight	x	x	x	x	x
LO	State that the 'Seat-of-the-Pants-Sense' is completely unreliable when visual contact with the ground is lost or when flying in IMC or poor visual horizon	x	x	x	x	x
LO	Differentiate between Vertigo, Coriolis effect and spatial disorientation	x	x	x	x	x
LO	Explain The Flicker Effect (Stroboscopic Effect) and discuss counter measures	x	x	x	x	x
LO	Explain how spatial disorientation can result from a mismatch in sensory input and information processing	x	x	x	x	x
LO	List the measures to prevent and/or overcome spatial disorientation	x	x	x	x	x
040 02 03 00	Health and hygiene					
040 02 03 01	Personal hygiene					
LO	Summarise the role of personal hygiene as a factor in human performance	x	x	x	x	x
040 02 03 02	Body rhythm and sleep					
LO	Name some internal body rhythms and their relevance to sleep	x	x	x	x	x
LO	Explain the term 'circadian rhythm'. State the approximate duration of a 'free-running' rhythm	x	x	x	x	x
LO	Explain the significance of 'Zeitgebers' in regulating the normal circadian rhythm	x	x	x	x	x
LO	State the effect of the circadian rhythm of body temperature on an individual's performance standard and the effect on an individual's sleep patterns	x	x	x	x	x
LO	List and describe the stages of a sleep cycle	x	x	x	x	x
LO	Differentiate between REM and non-REM sleep	x	x	x	x	x
LO	Explain the function of sleep and describe the effects of insufficient sleep on performance	x	x	x	x	x
LO	Explain the simple calculations for the sleep/wake credit/debit situation	x	x	x	x	x

Supprimé : Common minor ailments
influenza

... [3]

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	Explain how sleep debt can become cumulative	x	x	x	x	x	x
LO	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	x
LO	State the problems caused by circadian dysrhythmia (jet-lag) on an individual's performance and sleep	x	x	x	x	x	x
LO	Differentiate between the effects of westbound and eastbound travel	x	x	x	x	x	x
LO	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	x
LO	Describe the main effects of lack of sleep on an individual's performance	x	x	x	x	x	x
LO	List possible coping strategies for jet-lag	x	x	x	x	x	x
040 02 03 03	Problem areas for pilots						
	Common Minor Ailments						
LO	State the role of the Eustachian tube in equalizing pressure between the middle ear and the environment	x	x	x	x	x	x
LO	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
LO	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
LO	Indicate the effects of colds or flu on the ability to equalize pressure between the middle ear and the environment	x	x	x	x	x	x
LO	Describe the measures to prevent and/or clear problems due to pressure changes during flight	x	x	x	x	x	x
	Entrapped gases and barotrauma						
LO	Define Barotrauma	x	x	x	x	x	x

... [4]

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	Differentiate between otic, sinus, gastro-intestinal and aerodontalgia (of the teeth) barotraumas and explain avoidance strategies	x	x	x	x	x	x
LO	Explain why the effects of otic barotrauma can be worse in the descent	x	x	x	x	x	x
	Gastro-intestinal upsets						
LO	Indicate the major sources of gastro-intestinal upsets , state the effects that may result during flight and list the precautions that should be observed to reduce the occurrence of these problems	x	x	x	x	x	x
	Obesity						
LO	Define 'obesity'	x	x	x	x	x	x
LO	State the cause of obesity	x	x	x	x	x	x
LO	State the harmful effects of obesity on: - Possibility of developing coronary problems - Increased chances of developing diabetes - Ability to withstand g forces - The development of problems with the joints of the limbs - General circulatory problems - Ability to cope with Hypoxia and/or Decompression Sickness	x	x	x	x	x	x
LO	State the relationship between obesity and Body Mass Index (BMI)	x	x	x	x	x	x
LO	Calculate the BMI of an individual (given weight in Kg and height in metres) and state whether this BMI indicates that the individual is underweight, overweight, obese or within the normal range of body weight	x	x	x	x	x	x
	Food Hygiene						
LO	Explain the significance of food hygiene with regards to general health	x	x	x	x	x	x

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	Stress the importance of and methods to be adopted by aircrew especially when traveling abroad to avoid contaminated food and liquids	x	x	x	x	x	x
LO	List the major contaminating sources in foodstuffs	x	x	x	x	x	x
LO	State the major constituents of a healthy diet	x	x	x	x	x	x
LO	State the measure to avoid hypoglycemia	x	x	x	x	x	x
LO	State the role vitamins and trace elements are playing in a healthy diet	x	x	x	x	x	x
LO	State the importance of adequate hydration	x	x	x	x	x	x
	Tropical climates						
LO	List the problems associated with operating in tropical climates	x	x	x	x	x	x
LO	State the possible causes/sources of incapacitation in tropical or poorly developed countries with reference to: - Standards of hygiene - Quality of water supply - Insect-borne diseases - Parasitic worms - Rabies or other diseases that may be spread by contact with animals - Sexually transmitted diseases	x	x	x	x	x	x
LO	State the precautions to be taken to reduce the risks of developing problems in tropical areas	x	x	x	x	x	x
	Infectious diseases						
LO	State the major infectious diseases that may kill or severely incapacitate individuals	x	x	x	x	x	x
LO	State which preventative hygienic measures, vaccinations, drugs, and other measures, reduce the chances of catching these diseases	x	x	x	x	x	x
LO	State the precautions which must be taken to ensure that disease carrying insects are not transported between areas	x	x	x	x	x	x

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
040 02 03 04	Intoxication					
	Tobacco					
LO	State the harmful effects of using tobacco on: - The respiratory system - The cardio-vascular system - The ability to resist hypoxia - The ability to tolerate g forces - Night vision	X	X	X	X	X
	Caffeine					
LO	Indicate the level of caffeine dosage at which performance is degraded	X	X	X	X	X
LO	Besides coffee, indicate other beverages containing caffeine	X	X	X	X	X
	Alcohol					
LO	State the JAA maximum acceptable limit of alcohol for flight crew	X	X	X	X	X
LO	State the effects of consuming alcohol on: - Ability to reason - Inhibitions and self control - Vision - Sense of balance and sensory illusions - Sleep patterns - Hypoxia	X	X	X	X	X
LO	State the effects alcohol may have if consumed together with other drugs	X	X	X	X	X
LO	Define alcoholism	X	X	X	X	X
LO	List the signs and symptoms of alcoholism	X	X	X	X	X
LO	List the factors which may be associated with the development of alcoholism	X	X	X	X	X

**JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures**

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES

Subject – 040 – Human Performance

See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
LO	Define the 'unit' of alcohol and state approximate elimination rate from the blood	x	x	x	x	x
LO	State the maximum daily and weekly intake of units of alcohol which may be consumed without causing damage to organs and systems in the body	x	x	x	x	x
LO	Discuss the actions that might be taken if a crew member is suspected of being an alcoholic	x	x	x	x	x
LO	State the reasons why the aviation profession is particularly vulnerable to the occurrence of alcoholism	x	x	x	x	x
	Drugs and self-medication					
LO	State the dangers associated with the use of non prescription drugs	x	x	x	x	x
LO	State the side effects of common non prescription drugs used to treat colds, flu, hay fever and other allergies especially medicines containing anti-histamine preparations	x	x	x	x	x
LO	Interpret the general rule that 'if a pilot is so unwell that he/she requires any medication then he/she should consider him/herself unfit to fly	x	x	x	x	x
	Toxic materials					
LO	List those materials present in an aircraft which may, when uncontained, cause severe health problems	x	x	x	x	x
LO	List those aircraft component parts which if burnt may give off toxic fumes	x	x	x	x	x
040 02 03 05	Incapacitation in flight					
LO	State that incapacitation is most dangerous when its onset is insidious	x	x	x	x	x
LO	List the major causes of in-flight incapacitation.	x	x	x	x	x
LO	Differentiate between 'fits' and 'faints'	x	x	x	x	x
LO	State the importance of crew to be able to recognize and promptly react upon incapacitation of other crew members, should it occur in flight	x	x	x	x	x
LO	Explain coping methods and procedures	x	x	x	x	x

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
040 03 00 00	BASIC AVIATION PSYCHOLOGY					
040 03 01 00	Human information processing					
040 03 01 01	Attention and vigilance					
LO	Differentiate between 'attention' and 'vigilance'	x	x	x	x	x
LO	Differentiate between 'selected' and 'divided' attention	x	x	x	x	x
LO	Define 'hypovigilance'	x	x	x	x	x
LO	Identify the factors which may affect the state of vigilance	x	x	x	x	x
LO	Identify the factors which may affect the state of vigilance	x	x	x	x	x
LO	List the factors that may forestall hypovigilance during flight	x	x	x	x	x
LO	Indicate signs of reduced vigilance	x	x	x	x	x
LO	Name factors that affect a person's level of attention	x	x	x	x	x
040 03 01 02	Perception					
LO	Name the basis of the perceptual process.	x	x	x	x	x
LO	Describe the mechanism of perception ('bottom-up'/'top down' process)	x	x	x	x	x
LO	Illustrate why perception is subjective and state the relevant factors which influence interpretation of perceived information	x	x	x	x	x
LO	Describe some basic perceptual illusions	x	x	x	x	x
LO	Illustrate some basic perceptual concepts	x	x	x	x	x
LO	Give examples where perception plays a decisive role in flight safety	x	x	x	x	x

Supprimé : 'bottom-up'/'top-down' processing

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	Stress how persuasive and believable mistaken perception can manifest itself both on an individual and a group	x	x	x	x	x	x
040 03 01 03	Memory						
LO	Explain the link between the types of memory (to include sensory, working/short term and long term memories)	x	x	x	x	x	x
LO	Describe the differences between the types of memory in terms of capacity and retention time	x	x	x	x	x	x
LO	Justify the importance of sensory store memories in processing information	x	x	x	x	x	x
LO	State the average maximum number of separate items that may be held in working memory.	x	x	x	x	x	x
LO	Stress how interruption can effect the short-term/working memory	x	x	x	x	x	x
LO	Give examples of items that are important for pilots to hold in working memory during flight.	x	x	x	x	x	x
LO	Describe how the capacity of the working memory store may be increased.	x	x	x	x	x	x
LO	Define the Explain and distinguish between the following basic forms of learning different categories of information stored in the long term memory	x	x	x	x	x	x
LO	Explain that skills are kept primarily in the long term memory	x	x	x	x	x	x
LO	Explain amnesia and how it effects memory	x	x	x	x	x	x
LO	Name the common problems with both the long and short-term memories and the best methods to try and counter-act them	x	x	x	x	x	x
040 03 01 04	Response selection						
	<i>Learning principles and techniques</i>						
LO	Explain and distinguish between the following basic forms of learning: - Classical and operant conditioning (behaviouristic approach) - Learning by insight (cognitive approach) - Learning by imitating (modeling)	x	x	x	x	x	x

Supprimé : <sp> [5]

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	Find pilot related examples for each of these learning forms	x	x	x	x	x	x
LO	State factors which are necessary for and promote the quality of learning	x	x	x	x	x	x
LO	Explain ways to facilitate the memorisation of information by the following learning techniques : - Mnemonics - Mental training	x	x	x	x	x	x
LO	Describe the advantage of planning and anticipation of future actions - Define the term 'skills' - State the 3 phases of learning a skill (ANDERSON)	x	x	x	x	x	x
LO	Explain the term 'motor-programme' or 'mental schema'	x	x	x	x	x	x
LO	Describe the advantages and disadvantages of mental schemata	x	x	x	x	x	x
LO	Explain the model by Rasmussen which describes the guidance of a pilot's behaviour in different situations	x	x	x	x	x	x
LO	State possible problems or risks associated with skill-based, rule-based, and knowledge-based behaviour	x	x	x	x	x	x
LO	Explain the following phases in connection with the acquisition of automated behaviour - Cognitive phase - Associative phases - Automatic phase	x	x	x	x	x	x
LO	Describe the advantages and disadvantages of mental schemata	x	x	x	x	x	x
LO	Explain the model by Rasmussen which describes the guidance of a pilot's behaviour in different situations	x	x	x	x	x	x
LO	State possible problems or risks associated with skill-based, rule-based, and knowledge-based behaviour	x	x	x	x	x	x
	Motivation						
LO	Define motivation	x	x	x	x	x	x

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	Explain the influences of different levels of motivation on performance taking into consideration task difficulty	x	x	x	x	x	x
LO	Explain the 'Model of Human Needs' (MASLOW) and relate this to aviation	x	x	x	x	x	x
LO	Explain the relationship between motivation and learning	x	x	x	x	x	x
LO	Explain the problems of over-motivation especially in the context of extreme need of achievement	x	x	x	x	x	x
040 03 02 00	Human error and reliability						
040 03 02 01	Reliability of human behaviour						
LO	Summarise the current approach to human error in aviation (i.e. to expect error but to reduce its occurrence and consequences).	x	x	x	x	x	x
LO	Identify the consequences in respect of the current approach	x	x	x	x	x	x
LO	Name and explain factors which influence human reliability	x	x	x	x	x	x
040 03 02 02	Mental models and situational awareness						
LO	Define the term 'situation(al) awareness'	x	x	x	x	x	x
LO	List cues which indicate the loss of situational awareness and name the steps to regain it	x	x	x	x	x	x
LO	List factors which influence one's Situational Awareness both positively and negatively and stress the importance of Situational Awareness in the context of flight safety	x	x	x	x	x	x
LO	Define the term 'mental model' in relation to a surrounding complex situation	x	x	x	x	x	x
LO	Describe the advantage/disadvantage of mental models	x	x	x	x	x	x
LO	Explain the relationship between personal 'mental models' and the creation of cognitive illusions	x	x	x	x	x	x
040 03 02 03	Theory and model of human error						
LO	Define the term 'error'	x	x	x	x	x	x

Supprimé : Hypotheses on reality

... [6]

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	Explain the concept of the 'error chain'	X	X	X	X	X	X
LO	Differentiate between an isolated error and an error chain	X	X	X	X	X	X
LO	Distinguish between the main forms/types of errors (i.e. slips, faults, omissions and violations)	X	X	X	X	X	X
LO	Discuss the above errors and their relevance in-flight	X	X	X	X	X	X
LO	Distinguish between an active and a latent error and give examples	X	X	X	X	X	X
040 03 02 04	Error generation						
LO	Distinguish between internal and external factors in error generation	X	X	X	X	X	X
LO	Identify possible sources of internal error generation	X	X	X	X	X	X
LO	Define and discuss the two errors associated with motor programmes	X	X	X	X	X	X
LO	List the three main sources for external error generation in the cockpit	X	X	X	X	X	X
LO	Give examples to illustrate the following factors in external error generation in the cockpit : - Ergonomics - Economics - Social environment	X	X	X	X	X	X
LO	Name major goals in the design of human centered man-machine interfaces	X	X	X	X	X	X
LO	Define the term 'error tolerance'	X	X	X	X	X	X
LO	List (and describe) strategies which are used to reduce human error	X	X	X	X	X	X
040 03 03 00	Decision making						
040 03 03 01	Decision-making concepts						
LO	Define the term 'deciding' and 'decision making'	X	X	X	X	X	X

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	Describe the major factors on which a decision-making should be based during the course of a flight	x	x	x	x	x	x
LO	Describe the main human attributes with regard to decision making	x	x	x	x	x	x
LO	Discuss the nature of bias and its influence on the decision making process	x	x	x	x	x	x
LO	Describe the main error sources and limits in an individual's decision making mechanism	x	x	x	x	x	x
LO	State the factors upon which an individual's risk assessment is based	x	x	x	x	x	x
LO	Explain the relationship between risk assessment, commitment, and pressure of time on decision making strategies	x	x	x	x	x	x
LO	Describe the positive and negative influences exerted by other group members on an individual's decision making process	x	x	x	x	x	x
LO	Explain the general idea behind the creation of a model for decision making based upon: definition of the aim, collection of information, risk assessment, development of options, evaluation of options, decision, implementation, consequences, review and feedback	x	x	x	x	x	x
LO	Illustrate a practical approach for decision making between crew members	x	x	x	x	x	x
040 03 04 00	Avoiding and managing errors: cockpit management						
040 03 04 01	Safety awareness						
LO	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 and/or risks	x	x	x	x	x	x

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
LO	Stress the over-all importance of constantly and positively striving to monitor for errors and thereby maintaining situational awareness	x	x	x	x	x
040 03 04 02	Co-ordination (multi-crew concepts)					
LO	Name the objectives of the multi-crew concept	x		x	x	
LO	State and explain the elements of multi-crew concepts	x		x	x	
LO	Explain the concept “Standard Operating Procedure” (SOP)	x		x	x	
LO	Illustrate the purpose and procedure of crew briefings	x		x	x	
LO	Illustrate the purpose and procedure of checklists	x		x	x	
LO	Describe the function of communication in a coordinated team	x		x	x	
040 03 04 03	Co-operation					
LO	Distinguish between co-operation and co-action	x		x	x	
LO	Define the term 'group'	x		x	x	
LO	Illustrate the influence of interdependence in a group	x		x	x	
LO	List the advantages and disadvantages of team work	x		x	x	
LO	Explain the term 'synergy'	x		x	x	
LO	Define the term 'cohesion'	x		x	x	
LO	Define the term 'groupthink'	x		x	x	
LO	State the essential conditions for good teamwork	x		x	x	
LO	Explain the function of role and norm in a group	x		x	x	
LO	Name the different role patterns which occur in a group situation	x		x	x	

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
LO	Explain how behaviour can be affected by the following factors: - Persuasion - Conformity - Compliance - Obedience	x		x	x	
LO	Distinguish between status and role	x		x	x	
LO	Stress the inherent dangers of a situation where there is a mix of role and status within the cockpit	x		x	x	
LO	Explain the terms 'leadership' and 'followership'	x		x	x	
LO	Describe the trans-cockpit authority gradient and its affiliated leadership styles. (i.e. Autocratic, Laissez- faire and Synergistic)	x		x	x	
LO	Name the most important attributes for a positive leadership style	x		x	x	
040 03 04 04	Communication					
LO	Explain the function of 'information'	x	x	x	x	x
LO	Define the term 'communication'	x	x	x	x	x
LO	List the most basic components of interpersonal communication	x	x	x	x	x
LO	Explain the advantages of two-way communication as opposed to one-way communication	x	x	x	x	x
LO	Interpret the statement "One cannot not communicate." (WATZLAWICK)	x	x	x	x	x
LO	Distinguish between verbal and non-verbal communication	x	x	x	x	x
LO	Name the functions of non-verbal communication	x	x	x	x	x
LO	Describe general aspects of non-verbal communication	x	x	x	x	x
LO	Describe the advantages/disadvantages of implicit and explicit communication	x	x	x	x	x

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR	
		ATPL	CPL	ATPL/IR	ATPL		CPL
LO	State the attributes and possible problems of using 'professional' language	x	x	x	x	x	x
LO	Name and explain major obstacles to effective communication	x	x	x	x	x	x
LO	Give examples of aircraft accidents arising poor communications	x	x	x	x	x	x
LO	Explain the difference between intra and interpersonal conflict	x	x	x	x	x	x
LO	Describe the escalation process in human conflict	x	x	x	x	x	x
LO	List typical consequences of conflicts between crew members	x	x	x	x	x	x
LO	Explain the following terms as part of communication practice in regard to preventing or solving conflicts : - Inquiry - Active listening - Advocacy - Feedback - Metacommunication - Negotiation	x	x	x	x	x	x
040 03 05 00	Human behaviour,						
040 03 05 01	Personality, attitude and behaviour						
LO	Describe the factors which determine an individual's behaviour	x	x	x	x	x	x
LO	Define and distinguish between personality, attitude, and behaviour	x	x	x	x	x	x
LO	State the origin of personality and attitudes	x	x	x	x	x	x
LO	Explain how behaviour is generally a product of personality and attitude	x	x	x	x	x	x
LO	Discuss some effects that personality and attitudes may have on flight crew performance	x	x	x	x	x	x

Supprimé : Personality

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
040 03 05 02	Individual differences in personality and motivation					
LO	Describe the individual differences in personality by the mean 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
	Self-concept					
LO	Define the term 'self-concept' and the part it plays in any change of personality	x	x	x	x	x
LO	Explain how a self- concept of under-confidence may lead to an outward show of aggression and self- assertiveness	x	x	x	x	x
	Self-discipline					
LO	Define 'self-discipline' and justify its importance for flight safety	x	x	x	x	x
040 03 05 03	Identification of hazardous attitudes (error proneness)					
LO	Summarise examples of attitudes and behaviour which, if prevalent in a crew member, might represent a hazard to flight safety and their signs	x		x	x	
LO	Describe the personality attitude and behaviour patterns of an ideal crew member	x		x	x	
LO	Summarise how a person's attitude influences his work in the cockpit	x		x	x	
040 03 06 00	Human overload and underload					
040 03 06 01	Arousal					
LO	Explain the term 'arousal'	x	x	x	x	x
LO	Describe the relationship between arousal and performance	x	x	x	x	x
LO	Explain the circumstances under which underload may occur and its possible dangers	x	x	x	x	x
LO	Understand the graphical representation of the above relationship	x	x	x	x	x
040 03 06 02	Stress					

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
LO	Explain the term 'homeostasis'	x	x	x	x	x
LO	Explain the term 'stress'. Why is stress a natural human reaction	x	x	x	x	x
LO	State that the physiological response to stress is generated by the 'fight or flight' response	x	x	x	x	x
LO	Describe the function of the autonomic nervous system (ANS) in stress response	x	x	x	x	x
LO	Explain the biological reaction to stress by means of the 'general adaptation syndrome' (GAS)	x	x	x	x	x
LO	Explain the relationship between arousal and stress	x	x	x	x	x
LO	State the relationship between stress and performance	x	x	x	x	x
LO	State the basic categories of stressors	x	x	x	x	x
LO	List and discuss the major environmental sources of stress in the cockpit	x	x	x	x	x
LO	Discuss the concept of 'break-point' with regards to stress, overload and performance	x	x	x	x	x
LO	Name the principal causes of domestic stress	x	x	x	x	x
LO	State that the stress experienced as a result of particular demands varies between individuals	x	x	x	x	x
LO	Explain the factors which lead to differences in the levels of stress experienced by individuals	x	x	x	x	x
LO	List factors influencing the tolerance of stressors	x	x	x	x	x
LO	Create and explain a simple model of stress	x	x	x	x	x
LO	Explain the relationship between stress and anxiety	x	x	x	x	x
LO	Describe the effects of anxiety on human performance	x	x	x	x	x
LO	State the general effect of acute stress on the human system	x	x	x	x	x
LO	Name the 3 phases of the GAS	x	x	x	x	x
LO	Name the symptoms of stress relating to the different phases of the GAS	x	x	x	x	x

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
040 03 07 00	Advanced cockpit automation					
040 03 07 01	Advantages and disadvantages					
	LO Define and explain the basic concept of automation	x	x	x	x	x
	LO List the advantages/disadvantages of automation in the cockpit in respect of level of vigilance, attention, workload, situational awareness and crew coordination	x	x	x	x	x
	LO State the advantages and disadvantages of the two components of the man-machine system with regard to information input and processing, decision making, and output activities	x	x	x	x	x
	LO Explain the 'ironies of automation'	x	x	x	x	x
	LO Give examples of methods to overcome the disadvantages of automation	x	x	x	x	x
040 03 07 02	Automation complacency					
	LO State the main weaknesses in the monitoring of automatic systems	x	x	x	x	x
	LO Explain the following terms in connection with automatic systems : - Passive monitoring - Blinkered concentration - Confusion - Mode awareness	x	x	x	x	x
	LO Give examples of actions which may be taken to counteract ineffective monitoring of automatic systems	x	x	x	x	x
	LO Define 'complacency'	x	x	x	x	x
040 03 07 03	Working concepts					
	LO Analyse the influence of automation on crew communication and describe the potential disadvantages	x		x	x	
	LO Summarise how the negative effects of automation on pilots may be alleviated	x		x	x	

JAA Administrative & Guidance Material
Section Five: Licensing, Part Two: Procedures

CHAPTER 17: DETAILED THEORETICAL KNOWLEDGE SYLLABUS AND LEARNING OBJECTIVES
 Subject – 040 – Human Performance
 See Appendix 1 to JAR-FCL 1.470 and JAR-FCL 2.470

Syllabus Reference	Syllabus and Learning Objectives	Aeroplane		Helicopter		IR
		ATPL	CPL	ATPL/IR	ATPL	
LO	Interpret the role of automation with respect to flight safety	X		X	X	

Page 1: [1] Supprimé	52306345g	13/04/2004 16:18:00
	– the human factors approach towards 'professionalism'	
Page 3: [2] Supprimé	52306345g	13/04/2004 16:23:00
	– oxygen requirement of tissues	
Page 13: [3] Supprimé	52306345g	13/04/2004 16:22:00
	– gastro-intestinal upset	
Page 14: [4] Supprimé	52306345g	13/04/2004 16:22:00
	– hearing loss	
	– defective vision	
Page 20: [5] Supprimé	52306345g	13/04/2004 16:23:00
	– motor memory (skills)	
Page 22: [6] Supprimé	52306345g	13/04/2004 16:23:00
	– similarity, frequency	
	– completion causality	
Page 30: [7] Supprimé	52306345g	13/04/2004 16:23:00
	– types, causes, symptoms	
	– effects of fatigue	
Page 30: [8] Supprimé	52306345g	13/04/2004 16:23:00
	– rhythm disturbances	
	– symptoms, effects, management	