

Subject No 46 Human Factors

Each subject has been given a subject number and each topic within that subject a topic number. These reference numbers will be used on 'knowledge deficiency reports' and will provide valuable feed back to the examination candidate.

Sub Topic Syllabus Item

Human Factors - General

46.2 Airmanship, Professionalism and Responsibility

- 46.2.2 Define professionalism.
- 46.2.4 Distinguish between piloting for personal reasons and for hire or reward.
- 46.2.6 Distinguish between safety, effectiveness and efficiency in terms of pilot responsibilities.
- 46.2.8 List the people to whom a pilot is responsible in carrying out his or her duties.
- 46.2.10 List the people to whom a co-pilot is responsible in carrying out his or her duties.
- 46.2.12 Describe key features of good and safe airmanship.
- 46.2.14 State the approximate proportion of aircraft accidents and incidents commonly attributed to human performance errors.

46.4 Human Factors Models and Programmes

- 46.4.2 Define human factors as used in a professional aviation context.
- 46.4.4 Describe the fundamentals of the SHELL Model in relation to the interaction of humans with other humans, hardware, information sources and the environment.
- 46.4.6 Explain the role of human factors programmes in promoting aviation safety in flight operations in commercial aviation.

Physiology and the Effects of Flight

46.6 The Atmosphere

- 46.6.2 State the gases that make up the atmosphere.
- 46.6.4 State the percentage of each gas in the atmosphere.
- 46.6.6 Describe the variation of pressure as altitude increases.
- 46.6.8 Explain how the partial pressure of oxygen changes as altitude increases.

46.8 Circulation and Respiratory Systems

- 46.8.2 Describe the anatomy and physiology of the respiratory system.
- 46.8.4 Describe the anatomy and physiology of the circulatory system.
- 46.8.6 Describe the role of the lungs in oxygen and carbon dioxide transfer.

Sub Topic	Syllabus Item
46.10	Hypoxia
46.10.2	Define hypoxia.
46.10.4	State the partial pressure of oxygen both inside and outside the lungs at sea level.
46.10.6	Explain the mechanical effect of the partial pressure of oxygen on oxygen transfer in the lungs.
46.10.8	Explain the causes of hypoxia.
46.10.10	Describe the primary physiological and behavioural consequences of hypoxia for flight crew and passengers.
46.10.12	Describe the common symptoms of hypoxia.
46.10.14	Explain the reasons hypoxia symptoms are difficult to detect.
46.10.16	Explain the relationship between hypoxic onset and both vision and cognitive performance.
46.10.18	Describe how hypoxia can be prevented.
46.10.20	List the main factors influencing variation in hypoxia onset (tolerance) between individuals.
46.10.22	State the factors that affect the likelihood of suffering from hypoxia.
46.10.24	Describe how hypoxia can be treated.
46.10.26	Define the concept of 'time of useful consciousness'.
46.10.28	State the approximate time of useful consciousness at: <ul style="list-style-type: none"> (a) 18,000ft; (b) 25,000ft; (c) 35,000ft.
46.10.30	Explain oxygen paradox.
46.10.32	Describe the primary physiological effects of cabin pressurization loss at altitudes of 25,000ft and above.
46.10.34	List the key safety critical actions flight crew must take in the event of a high altitude cabin pressurization failure.
46.10.36	Identify the principle features of supplemental oxygen systems use to assist aircrew and passengers in the event of an in-flight pressurization emergency.
46.12	Hyperventilation
46.12.2	Define hyperventilation.
46.12.4	Explain the causes of hyperventilation.
46.12.6	Describe the symptoms of hyperventilation.

Sub Topic	Syllabus Item
46.12.8	Describe how hyperventilation can be treated.
46.12.10	Describe the differences between hyperventilation and hypoxia.
46.14	Entrapped Gasses
46.14.2	Define barotrauma.
46.14.4	Explain the causes of barotrauma.
46.14.6	Describe the symptoms of barotrauma.
46.14.8	Describe the effects of barotrauma on various parts of the body.
46.14.10	Describe how barotrauma can be prevented.
46.14.12	Describe how barotrauma can be treated.
46.16	Decompression Sickness
46.16.2	Define decompression sickness.
46.16.4	Explain the causes of decompression sickness.
46.16.6	Describe the symptoms of decompression sickness.
46.16.8	Explain how decompression sickness can be prevented.
46.16.10	Describe how decompression sickness can be treated.
46.16.12	Explain the effects of an explosive decompression on the body.
46.16.14	Explain the actions that must be taken to deal with an explosive decompression.
46.16.16	Explain the dangers of flying after diving.
46.16.18	State the approximate required times between diving at various depths and flying.
46.18	Vision and Visual Perception
46.18.2	Describe the anatomy and physiology of the eye.
46.18.4	Identify the following eye structure components: <ul style="list-style-type: none"> (a) lens; (b) cornea; (c) retina; (d) fovea; (e) optic nerve disc; (f) cone cells; (g) rod cells.

Sub Topic	Syllabus Item
46.18.6	Distinguish between rod and cone cell functions and distribution in the retina.
46.18.8	Describe the limitations of the eye in terms of: <ul style="list-style-type: none"> (a) the ability to discern objects at night; (b) the ability to discern objects in daylight, including wires and other aircraft; (c) poor lighting; (d) glare; (e) lack of contrast; (f) the blind spot; (g) colour perception; (h) empty field myopia.
46.18.10	Explain the process of dark adaptation.
46.18.12	State the normal time for full night vision adaptation.
46.18.14	Identify precautionary actions to protect night vision adaptation.
46.18.16	Describe methods of cockpit/flight deck lighting and problems associated with each.
46.18.18	Describe: <ul style="list-style-type: none"> (a) long sightedness; (b) short sightedness; (c) presbyopia; (d) astigmatism.
46.18.20	Describe the requirements for using corrective lenses.
46.18.22	Describe the factors associated with the selection of suitable sunglasses for flying.
46.18.24	Describe the effects of hypoxia on vision.
46.18.26	Describe the visual system resting state focus and its effects on object detection.
46.18.28	Explain effective visual search techniques.
46.18.30	Explain the see and avoid method of avoiding mid-air collisions.
46.18.32	Explain the use of visual cues during landing.
46.18.34	Explain the following visual illusions, and describe methods of avoiding and/or coping with them: <ul style="list-style-type: none"> (a) autokinesis;

Sub Topic**Syllabus Item**

- (b) stroboscopic illumination illusion/flicker vertigo;
- (c) the break-off phenomenon;
- (d) sector whiteout;
- (e) the black hole phenomenon.

46.18.36 Describe conditions which can lead to the creation of a false horizon.

46.18.38 Explain the effect of a false horizon on visual perception.

46.18.40 Explain relative motion.

46.18.42 Explain the effect of fog, haze, and/or dust on visual perception.

46.18.44 Describe the optical characteristics of the windshield.

46.18.46 Explain the effect of rain on the windshield.

46.18.48 Explain the effect of sloping terrain on visual perception.

46.18.50 Explain the effect of the following factors on visual perception during an approach:

- (a) steep/shallow approach angles;
- (b) length, width and texture of the runway;
- (c) the intensity of the approach lights.

46.20 Hearing and Balance

46.20.2 Describe the anatomy and physiology of the ear.

46.20.4 Describe the effect of prolonged noise exposure on hearing.

46.20.6 Describe methods of protecting hearing.

46.20.8 Specify the various levels of noise in decibels at which various grades of hearing protection are required.

46.20.10 Specify noise levels at which hearing damage may occur.

46.20.12 Describe what is meant by the action threshold for hearing protection.

46.20.14 Explain the effects of age induced hearing loss (presbycusis).

46.20.16 Explain the effects of pressure changes on the middle ear and eustachian tubes.

46.20.18 Explain the effects of colds; hay fever; and/or allergies on the sinuses and eustachian tubes.

46.22 Spatial Orientation

46.22.2 Define spatial orientation.

46.22.4 Define disorientation.

Sub Topic	Syllabus Item
46.22.6	Outline the anatomy and physiology of the motion, orientation and gravitational sensory organs, including: <ul style="list-style-type: none"> (a) the semi-circular canals; (b) vestibular sac/tubes.
46.22.8	Explain the interconnection between the senses of vision and orientation in maintaining an accurate sense spatial orientation.
46.22.10	Explain the bodies limitations in maintaining spatial orientation when vision is adversely affected.
46.22.12	Describe and explain the effects of the following spatial illusions: <ul style="list-style-type: none"> (a) the leans and sub-threshold stimulation; (b) somatogravic illusion; (c) somatogyral illusion; (d) cross coupled turning (coriolis effect); (e) pressure vertigo.
46.22.14	Describe the factors which affect an individual's susceptibility to disorientation.
46.22.16	Explain how disorientation can be prevented.
46.24	Gravitational Forces
46.24.2	Explain the effects of positive and negative accelerations on: <ul style="list-style-type: none"> (a) the circulatory system; (b) vision; (c) consciousness.
46.24.4	Explain the causes and symptoms of: <ul style="list-style-type: none"> (a) black-out; (b) red-out; (c) G-LOC (gravity induced loss of consciousness).
46.26	Motion Sickness
46.26.2	Explain the causes of motion sickness.
46.26.4	Describe how motion sickness can be prevented.
46.26.6	Describe how motion sickness can be treated.
46.28	Flight Anxiety
46.28.2	Explain the causes of flight anxiety.

Sub Topic Syllabus Item

46.28.4 Recognise the signs of flight anxiety in passengers.

46.28.6 Describe how flight anxiety can be prevented.

46.28.8 Describe how flight anxiety can be treated.

Flying and Health

46.30 Fitness to Fly

46.30.2 Describe the term fitness to fly.

46.30.4 Explain the CAANZ system of assessing medical fitness, with regard to:

- (a) Medical Examiners Grade 1 and Grade 2;
- (b) reasons for medical examinations;
- (c) means of obtaining medical examinations;
- (d) frequency of medical examinations;
- (e) responsibilities of pilots towards medical fitness for flight.

46.30.6 Identify symptoms and circumstances that would lead you to consult your aviation medical examiner prior to further flight.

46.30.8 Describe the IMSAFE method of assessing fitness for flight.

46.30.10 Describe the problems associated with pregnancy and flying.

46.30.12 State when a pregnant pilot must stop flying.

46.30.14 Describe the following factors, including their effects on pilot performance and methods by which they may be minimised/managed:

- (a) arterial disease;
- (b) blood pressure;
- (c) diet;
- (d) exercise;
- (e) obesity;
- (f) smoking;
- (g) respiratory tract infection/allergies (including colds, sinus, hay fever, influenza, asthma);
- (h) food poisoning and gastroenteritis;
- (i) neurological factors (including fits/epilepsy, brain injury, fainting, headaches, migraines);
- (j) emotional factors (including depression and anxiety);

Sub Topic	Syllabus Item
	(k) psychiatric diseases;
	(l) physical injuries;
	(m) dehydration;
	(n) hypoglycaemia;
	(o) tropical diseases;
	(p) malaria;
	(q) hepatitis;
	(r) sexually transmitted infections.
46.30.16	Describe the symptoms of gastrointestinal problems.
46.30.18	Identify the primary causes of food poisoning.
46.32	Alcohol and Drugs
46.32.2	Explain the effects of alcohol on the body.
46.32.4	Explain the effects of alcohol on pilot performance.
46.32.6	State the recommended time periods between the consumption of alcohol and flying.
46.32.8	Describe how individuals differ in the effect of alcohol consumption.
46.32.10	Explain the effects of drugs on the body.
46.32.12	Explain the effects of drugs on pilot performance.
46.32.14	State where information can be obtained about the suitability of over the counter and prescription medication for flying.
46.32.16	Explain why illegal/recreational drugs are unacceptable for pilots.
46.34	Blood Donation
46.34.2	Describe the effect on the body of donating blood.
46.34.4	State the recommended time period between donating blood and flying.
46.36	Environmental Hazards
46.36.2	Describe the symptoms, effects and immediate treatments for the following hazards present in the aviation environment:
	(a) carbon monoxide;
	(b) fuel;
	(c) chemical sprays;
	(d) lubricating oils;

Sub Topic	Syllabus Item
	(e) hydraulic fluids;
	(f) compressed gases;
	(g) liquid oxygen;
	(h) de-icing fluids;
	(i) fire extinguishing agents;
	(j) fire accelerant substances;
	(k) ozone;
	(l) solar radiation.
46.36.4	Identify the negative effects of vibration and resonance.
46.36.6	Outline ways that vibration can be controlled.
46.38	Stress Management
46.38.2	Define stress.
46.38.4	Describe a simple model of stress.
46.38.6	Define arousal.
46.38.8	Explain the relationship between stress and arousal.
46.38.10	Identify and give examples of physical, environmental, task-related, organisational and psychological stressors.
46.38.12	Describe the following environmental stressors:
	(a) heat;
	(b) cold;
	(c) noise;
	(d) vibration;
	(e) humidity.
46.38.14	Explain methods of identifying stress.
46.38.16	Explain the difference between acute and chronic stress.
46.38.18	Describe the physiological and psychological effects of stress.
46.38.20	Describe the effects of stress on attention, motivation and performance.
46.38.22	Describe the factors that improve personal stress tolerance.
46.38.24	Describe the relationship between stress and fatigue.
46.38.26	Explain methods of managing stress.

Sub Topic	Syllabus Item
46.40	Sleep and Fatigue (Alertness management)
46.40.2	Describe the stages of sleep.
46.40.4	Describe the mechanism of sleep regulation.
46.40.6	Describe problems associated with sleep at abnormal times of the day.
46.40.8	Explain what is meant by sleep debt.
46.40.10	Describe what is meant by sleep inertia, when it is most likely to occur and how long it takes to wear off.
46.40.12	Explain how individuals differ in their requirement for sleep.
46.40.14	Explain the effects of the following alertness management techniques: <ul style="list-style-type: none"> (a) napping; (b) caffeine consumption; (c) alcohol consumption; (d) taking sedatives; (e) taking stimulants other than caffeine.
46.40.16	Describe sleep disorders and their effects on pilot performance.
46.40.18	Define fatigue.
46.40.20	Describe the symptoms of fatigue.
46.40.22	Explain the causes of fatigue and its effect on pilot performance.
46.40.24	Explain the difference between acute and chronic fatigue.
46.40.26	Describe methods of managing fatigue.
46.40.28	Define the following terms: <ul style="list-style-type: none"> (a) biological clock; (b) circadian rhythm; (c) circadian dysrhythmia; (d) desynchronisation; (e) zeitgeber.
46.40.30	Describe the central human physiological processes underlying circadian rhythm processes.
46.40.32	Explain how circadian rhythms affect pilot performance.
46.40.34	Explain the effects of circadian dysrhythmia and methods of managing these.

Sub Topic	Syllabus Item
46.40.36	Describe the rate of adjustment of crossing time zones, in easterly and westerly directions.
46.40.38	Explain why the rate of time zone adjustment varies between easterly and westerly directions.
46.40.40	Describe the impact of shiftwork on a pilot performance.
46.40.42	Describe how the biological effects of shiftwork can be minimised.
46.40.44	Identify the principles of good rostering practice.
46.42	Ageing
46.42.2	Describe the effects of the normal processes of human ageing on: <ul style="list-style-type: none"> (a) the sensitivity and acuity of the sensory systems; (b) muscular strength; (c) resilience and reaction times; (d) sleep/wakefulness patterns; (e) cognitive or mental functioning; (f) the acquisition of new information; (g) the retention and retrieval of stored information in memory; (h) the rate of information processing; (i) insight and self awareness of your individual capabilities.
46.42.4	Describe methods by which age-related changes in memory and speed of information processing can be moderated by older pilots.
46.42.6	Describe what changes would indicate early dementia or age related cognitive impairment in another pilot.
	Aviation Psychology
46.44	Information Processing
46.44.2	Identify the human sensors pilots depend on for information acquisition.
46.44.4	Describe the brain's role in registering sensations, processing sensory information, storing information and controlling actions.
46.44.6	Describe a basic model of information processing, including the concepts of: <ul style="list-style-type: none"> (a) attention; (b) divided attention; (c) selective attention; (d) attention getting stimulus;

Sub Topic	Syllabus Item
	(e) sensory threshold;
	(f) sensitivity;
	(g) adaptation;
	(h) habitation.
46.44.8	Describe the following types of memory:
	(a) peripheral/sensory memory;
	(b) short term/working memory;
	(c) long term memory;
	(d) motor/skills memory;
	(e) semantic memory;
	(f) episodic memory.
46.44.10	Describe the limitations and failures of memory.
46.44.12	Explain the following methods of retaining and retrieving information from memory:
	(a) chunking;
	(b) mnemonics;
	(c) associations (verbal and visual);
	(d) checklists;
	(e) aide memoirs.
46.44.14	Explain the concept of mental workload.
46.44.16	Explain the concept of overload.
46.44.18	Describe methods of managing potential overload.
46.44.20	Describe and compare skill, rule and knowledge based behaviours.
46.44.22	Describe the process of acquiring a skill.
46.44.24	Describe failures of skill, rule and knowledge based behaviours.
46.44.26	Explain confirmation bias.
46.44.28	Define perception.
46.44.30	Describe the effect of the following on perception:
	(a) expectation;
	(b) experience.

Sub Topic	Syllabus Item
46.44.32	Describe the formation of mental models.
46.46	Situational Awareness
46.46.2	Define situational awareness.
46.46.4	Explain the importance of situational awareness on different phases of flight.
46.46.6	Describe strategies to maintain and enhance situational awareness.
46.46.8	Explain the relationship between CRM and the building of situational awareness amongst flight-crew.
46.48	Judgement and Decision Making
46.48.2	Distinguish between skills, knowledge and attitudes.
46.48.4	Describe hazardous attitudes.
46.48.6	Describe methods of countering the hazardous attitudes.
46.48.8	Describe the error/poor judgement chain.
46.48.10	Explain clues or red flags that can assist in identifying the error/poor judgement chain.
46.48.12	Identify risk assessment techniques.
46.48.14	Identify risk levels that compromise safety.
46.48.16	Describe the elements and risk levels associated with ultra-safe systems.
46.48.18	Identify risks that would degrade system safety goals.
46.48.20	Describe the following risk management strategies: <ul style="list-style-type: none"> (a) isolation; (b) mitigation; (c) elimination.
46.48.22	Outline the general concepts behind decision making.
46.48.24	Describe methods of enhancing decision making skills.
46.48.26	Identify common decision-making models used in aviation training (DECIDE, SADIE etc) and explain their application.
46.48.28	Identify specific factors that influence the decision making process.
46.48.30	Explain the setting of personal limitations and decision points.
46.48.32	Outline the dangers of get-home-itis.
46.48.34	Identify situations where time pressure compromises safety or increases risk levels.

Sub Topic	Syllabus Item
46.50	Social Psychology and Flight Deck Management
46.50.2	Identify the broad characteristics of personality and distinguish individual differences.
46.50.4	Define cognitive dissonance.
46.50.6	Explain the concept of crew resource management (CRM).
46.50.8	Identify crew resource management elements of accident reviews.
46.50.10	Describe methods of maximising crew resource management.
46.50.12	Define teamwork and team membership.
46.50.14	Identify the factors that affect team performance.
46.50.16	Describe how effective teams or team working can reduce errors.
46.50.18	Describe group decision making.
46.50.20	Explain the advantages and disadvantages of group decision making.
46.50.22	Explain the concepts of: <ul style="list-style-type: none"> (a) risk shift; (b) conformity; (c) compliance.
46.50.24	Describe the following personality traits and explain their effect on group decision making: <ul style="list-style-type: none"> (a) introversion; (b) extraversion; (c) anxiety.
46.50.26	Explain and differentiate between goal/task directed and relationship directed styles of behaviour.
46.50.28	Describe autocratic and democratic leadership styles.
46.50.30	Describe ideal leadership characteristics.
46.50.32	Explain problems that can arise from: <ul style="list-style-type: none"> (a) status/seniority differences; (b) lack of assertiveness; (c) cultural differences.
46.50.34	Explain the concept of authority gradient.
46.50.36	Explain the advantages and disadvantages of varying cockpit authority gradients.

Sub Topic	Syllabus Item
46.50.38	Explain problems that can arise from an authority gradient that is too steep or too shallow.
46.50.40	Describe the cultural aspects of authority gradients.
46.50.42	Describe a basic model of communications.
46.50.44	Explain the influence of the following on the effectiveness of cockpit communications: <ul style="list-style-type: none"> (a) the skills of enquiry, advocacy and assertion; (b) listening; (c) conflict resolution; (d) critique/feedback.
46.50.46	Describe the barriers to effective communication.
46.50.48	Identify techniques to reduce communication barriers.
46.50.50	Explain the following strategies used to reduce communication errors in aviation: <ul style="list-style-type: none"> (a) read-backs; (b) standard phraseology; (c) standard calls; (d) cross-checks; (e) document verification checks; (f) display and control setting checks; (g) sterile cockpit policies.
46.50.52	Identify signs that information transfer has been successful or otherwise.
46.50.54	Describe the differences between upward, downward and horizontal communication and give examples of where each is used in the workplace.
46.50.56	Describe means of managing effective communications between flight crew and: <ul style="list-style-type: none"> (a) cabin crew; (b) passengers; (c) air traffic control services; (d) maintenance personnel; (e) company personnel.
46.52	Threat and Error Management
46.52.2	Explain the role of human error in aviation accidents.

Sub Topic	Syllabus Item
46.52.4	Explain the degree to which human error can be eliminated.
46.52.6	Describe threats which could potentially affect a safe flight.
46.52.8	Describe threat management, including the means of: <ul style="list-style-type: none"> (a) recognising threats; (b) avoiding; (c) mitigating the effects of threats.
46.52.10	Describe and identify examples of overt/active threats.
46.52.12	Describe and identify examples of latent threats.
46.52.14	Identify methods and means for detecting error in the aviation system.
46.52.16	Describe error avoidance techniques.
46.52.18	Explain how incipient errors can be trapped after they have been committed.
46.52.20	Explain how the consequences of errors that are not trapped can be mitigated.
46.52.22	Explain how CRM countermeasures assist the management of threat and error.
46.52.24	Explain the basic elements and features of the Reason Model.
46.52.26	Describe and identify examples of a latent failure/error.
46.52.28	Describe and identify examples of an active failure/error.
46.52.30	Identify and describe slips, lapses, mistakes and violations.
46.54	Culture
46.54.2	Identify the elements in a safety culture.
46.54.4	Describe reporting mechanisms to rectify safety problems.
46.54.6	Define the core concept of an organisational culture.
46.54.8	Outline the ways in which organisational culture affects performance.
46.54.10	Describe what is meant by harassment, its effects on employees and how it should be dealt with should it arise in the workplace.
46.54.12	Describe what is meant by stereotypes and stereotypical behaviour within organisations and give examples of where such behaviour may have a negative impact on safety.
46.54.14	Describe the inertia of large organisations with respect to safety messages.
46.54.16	List the key reasons for a safety reporting system within an aviation organisation.
46.54.18	Explain the rationale for mandatory reporting of incidents as required by CAR Part 12.

Sub Topic	Syllabus Item
46.54.20	Describe the key elements of the Just Culture approach to the management of errors, reporting, and the use of disciplinary sanctions under this approach.
46.54.22	Distinguish between normal error, at risk behaviour and high culpability behaviour.
46.54.24	Distinguish between negligent and reckless behaviour.
46.54.26	Describe the concepts of risk creep and risk tolerance and their application within an aviation organisation.
46.54.28	Describe the role of punitive sanction.

Ergonomics

46.56 Flight Deck Design

46.56.2	Describe the basic principles of control, display and workspace design.
46.56.4	Explain the importance of the following in flight deck design: <ul style="list-style-type: none"> (a) reach; (b) comfort; (c) posture; (d) lighting levels.
46.56.6	Define biomechanics.
46.56.8	Define anthropometry.
46.56.10	Distinguish between biometrics, biomechanics and anthropometry.
46.56.12	Describe applications of biomechanics in the design of flight decks.
46.56.14	Explain the relevance of anthropometry in the design of flight decks.
46.56.16	Describe how pilot performance can be positively influenced by adopting a pilot centred approach to cockpit design.
46.56.18	Describe the effects of a poorly designed cockpit on pilot performance.
46.56.20	Explain the importance of eye datum or eye design position.
46.56.22	Describe the problems associated with windshield design and visibility.
46.56.24	List the advantages and disadvantages of working in an automated cockpit.
46.56.26	Describe the effects of advanced cockpit automation, including: <ul style="list-style-type: none"> (a) failure to monitor; (b) boredom and complacency; (c) loss of proficiency;

Sub Topic	Syllabus Item
	(d) job satisfaction;
	(e) crew coordination;
	(f) problems associated with equipment failure.
46.56.28	Explain the concept of mode awareness in setting up and operating automated systems.
46.56.30	Describe elements of coping behaviour associated with automatic cockpits.
46.58	Design of Controls
46.58.2	Explain the importance of the following in control design:
	(a) size;
	(b) shape/recognition by touch;
	(c) location;
	(d) layout and the uniformity of spatial arrangement;
	(e) direction of movement;
	(f) visibility.
46.60	Instrumentation, Displays and Alerts
46.60.2	Explain the importance of the following in the design of instrumentation, displays and alerts:
	(a) size;
	(b) position;
	(c) layout;
	(d) visibility;
	(e) legibility;
	(f) scale;
	(g) use of colour;
	(h) illumination.
46.60.4	Describe parallax error.
46.60.6	Describe common errors in display interpretation.
46.60.8	Describe potential errors in the interpretation of three pointer altimeters.
46.60.10	Describe potential errors in the interpretation of the artificial horizon.
46.60.12	Describe the basic requirements of alerts.

Sub Topic	Syllabus Item
46.60.14	Describe problems associated with the presentation and misinterpretation of alerts.
46.60.16	Describe how colour coding conventions are used in aviation on instruments, displays and navigation charts.
46.62	Documents and Procedures
46.62.2	Explain the rationale behind consistent and thorough checklist and SOP use as opposed to reliance on memory.
46.62.4	Distinguish between normal and emergency checklists.
46.62.6	Describe the elements of an effective checklist.
46.62.8	Identify the phases of flight in which a checklist plays an important role.
46.62.10	Describe the reasons for and the possible ramifications of checklist complacency.
46.62.12	Explain the importance of colour, font type and size for written checklists.
46.62.14	Describe problems associated with the design and use of checklists and manuals.
46.62.16	Describe problems associated with the design and use of maps and charts.
	First Aid and Survival
46.64	First Aid
46.64.2	Describe the basic principles of first aid.
46.64.4	Describe the basic principles of Cardiopulmonary Resuscitation.
46.64.6	Identify basic items carried in a certified general aviation aircraft first aid kit.
46.66	Survival
46.66.2	State the components of a pre-flight passenger briefing by a pilot with respect to aircraft safety features and equipment.
46.66.4	Explain the basic steps in post-crash survivor management.
46.66.6	Explain the basic principles of survival.
46.66.8	List the priorities of survival in order of importance.
46.66.10	List additional useful but discretionary safety and survival items that could be carried on a cross-country flight over bush clad and mountainous terrain.
46.66.12	Explain the process of hypothermia.