THE HONG KONG INSTITUTION OF ENGINEERS
SCHEME "A" GRADUATE TRAINING
CONSOLIDATED MODEL TRAINING GUIDE
AIRCRAFT ENGINEERING

Location where Training will be done	Training Outcomes	Previous Reference	HKIE Compe-tence Ref.	Length of Time (weeks)
	1. Introduction			**1**
	1.1 Information about the Company			
Location 1	***Description 1***			
	1.1.1 Own Organisation			
	a) Discuss the size, history and internal culture of the trainee's own organisation.	*CCO 1.10*	11	
	b) Discuss an overview of the relationship between the trainee's own organisation, government departments and other organisations.	*CCO 1.10*	11	
	c) Discuss the structure and functions of different units within the trainee's own organisation.	*CCO 1.10*	11	
	d) Demonstrate the awareness to follow operational procedures and practices as required by the trainee's own organisation.	*CCO 1.10*	11	
	e) Discuss the objectives, requirements and processes that support the quality assurance system within the trainee's own organisation.	*CCO 1.10*	11	
	f) Apply the quality assurance system according to the policy of the trainee's own organisation.	*CCO 1.10*	11	
	1.1.2 Training Programme, Prospects and Career Development			
	a) Discuss an overview of the internal communication systems, training system and career development pathway within the trainee's own organisation.	*CCO 1.10*	11	

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	b) Demonstrate a commitment to extend and develop up-to-date technical knowledge through reading relevant engineering publications, participating in seminars or conferences, and information searching.	*CCO 1.2*	11	
	c) Demonstrate a commitment to extend and develop up-to-date knowledge of local, regional and international current affairs through reading relevant engineering publications, participating in seminars or conferences, and information searching.	*CCO 1.3*	11	
	d) Demonstrate a commitment to participate in the local organisations or community services for general personal development.	*CCO 1.3*	11	
	1.2 Information about the HKIE			
Location 2	***Description 2***			
	a) Discuss an overview of the HKIE organisation as well as its history and role in society.	*CCO 1.1*	11	
	b) Demonstrate a commitment to participate in relevant activities organised by the HKIE.	*CCO 1.1*	11	
	2. Engineer as a Profession			**Conti-nuous**
	2.1 Professionalism			
Location 3	***Description 3***			
	a) Discuss the social and ethical responsibilities of engineers in society.	*CCO 1.2*	8	

Location where Training will be done	Training Outcomes	Previous Reference	HKIE Compe-tence Ref.	Length of Time (weeks)
	b) Explain the rules and standard requirements of conducting engineering activities to the HKIE, employers, clients, general public and colleagues in accordance with the HKIE Rules of Conduct.	*CCO 1.2*	8	
	c) Explain the ethical standards and responsibilities of professional engineers as required by the HKIE.	*CCO 1.2*	8	
	d) Demonstrate the awareness to follow the codes of practice of professional engineers.	*CCO 1.2*	8	
	e) Demonstrate the awareness to uphold the dignity, standing and reputation of the engineering profession.	*CCO 1.2*	8	
	f) Demonstrate the awareness to protect the interests of the community including the environment, welfare, health and safety in conducting engineering activities.	*CCO 1.2*	8	
	2.2 Occupational Safety and Health			
Location 4	***Description 4***			
	a) Demonstrate an understanding of the statutory health and safety requirements.	*CCO 1.5*	9	
	b) Demonstrate an understanding of the responsibilities of professional engineers for the health and safety of the employers, employees and general public when engaging in engineering activities.	*CCO 1.5*	9	
	c) Apply the safety management system in accordance with the industry standards and regulatory requirements.	*CCO 1.5*	7	
	2.3 Environment			
Location 5	***Description 5***			
	a) Demonstrate an understanding of the relevant statutory environmental requirements related to the trainee's discipline.	*CCO 1.6*	9	

Location where Training will be done	Training Outcomes	Previous Reference	HKIE Compe-tence Ref.	Length of Time (weeks)
	b) Evaluate the inter-relationship of technology with the environment in the work place.	*CCO 1.6*	9	
	c) Demonstrate the awareness of the impact of technology on the environment in society.	*CCO 1.6*	9	
	3. Engineering Practice and Application			**51**
	3.1 Engineering Practice and Application Part I			10
Location 6	***Description 6***			
	3.1.1 Aircraft Engineering Practice			
	a) Appraise the concept of airworthiness.	*CO 1.1*	1	
	b) Comply the aircraft engineering practice with the Hong Kong, US, EU and NAA legislation.	*CO 1.1*	2	
	c) Comply the Air Operator's Certificate requirements and practices with the Hong Kong SAR aviation legislation.	*CO 1.1*	2	
	d) Assess the aircraft engineering design and production organisation requirements and practices.	*CO 1.1*	3	
	e) Justify the decisions on aircraft maintenance organisation requirements and practices.	*CO 1.1*	12	
	f) Assess the activities to achieve continuing airworthiness.	*CO 1.1*	6	
	g) Assess the possible human factors' impact on the aircraft engineering practice.	*CO 1.1*	9	
	h) Assess the operational risks for appropriate mitigation applications.	*CO 1.1*	7	
	i) Apply the knowledge of electrical and electronic fundamentals in aircraft engineering practice.	*CO 1.1*	1	

Location where Training will be done	Training Outcomes	Previous Reference	HKIE Compe-tence Ref.	Length of Time (weeks)
	j) Apply the knowledge of digital techniques and electronic instrument systems in aircraft engineering practice.	*CO 1.1*	1	
	k) Apply the knowledge of material and hardware in aircraft engineering practice.	*CO 1.1*	1	
	l) Apply the aircraft maintenance practices.	*CO 1.1*	6	
	m) Apply the knowledge of aeroplane / helicopter aerodynamics, structures and systems.	*CO 1.1*	1	
	n) Apply the knowledge of gas turbine engine / piston engine / propeller.	*CO 1.1*	1	
	3.2 Engineering Practice and Application Part II			41
Location 7	***Description 7***			
	3.2.1 Design / Maintenance Operations (choose 3.2.1.1 or 3.2.1.2)			
	3.2.1.1 Design			
	a) Appraise the airworthiness codes on aircraft systems / engines / structures.	*CO 1.2*	4	
	b) Appraise type approval process.	*CO 1.2*	4	
	c) Appraise the classification of major / minor change and repair.	*CO 1.2*	4	
	d) Appraise the major / minor changes and repairs in aircraft systems / engines / structures.	*CO 1.2*	4	
	e) Produce grammatically correct, clear and concise design documents.	*CO 1.2*	10	

Location where Training will be done	Training Outcomes	Previous Reference	HKIE Compe-tence Ref.	Length of Time (weeks)
	f) Communicate ideas in an accurate and clear manner with aircraft / engine manufactures for design liaison.	*CO 1.2*	10	
	g) Appraise the aircraft critical design configuration and control limitations from aircraft design perspectives.	*CO 1.2*	1	
	h) Appraise the impacts by ageing aircraft from aircraft design perspectives.	*CO 1.2*	1	
	i) Produce aircraft safety assessment.	*CO 1.2*	7	
	j) Develop the aircraft maintenance and reliability programme.	*CO 1.2*	1	
	3.2.1.2 Maintenance Operations			
	a) Comply with the Certificate of Airworthiness requirement.	*CO 1.3*	1	
	b) Comply with the Certificate of Release to Service requirement.	*CO 1.3*	1	
	c) Comply with the maintenance programme requirement.	*CO 1.3*	1	
	d) Comply with the reliability programme requirement.	*CO 1.3*	1	

Location where Training will be done	Training Outcomes	Previous Reference	HKIE Compe-tence Ref.	Length of Time (weeks)
	e) Communicate ideas in an accurate and clear manner with aircraft manufacturers, engine manufacturers, aviation authorities or operators.	*CO 1.3*	10	
	f) Develop the aircraft maintenance check schedule and package management.	*CO 1.3*	6	
	g) Develop the aircraft maintenance production planning and control.	*CO 1.3*	6	
	h) Develop the aircraft maintenance defect control and management.	*CO 1.3*	6	
	i) Apply aircraft, engine and structure maintenance practices.	*CO 1.3*	1	
	j) Apply engineering knowledge on aircraft / engine systems and structures design appreciation, modification, repair, overhaul, replacement and inspection.	*CO 1.3*	1	
	k) Appraise the aircraft critical design configuration and control limitations from maintenance operation perspective.	*CO 1.3*	1	
	l) Appraise the impacts by ageing aircraft from maintenance operation perspective.	*CO 1.3*	1	

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Location where Training will be done	Training Outcomes	Previous Reference	HKIE Compe-tence Ref.	Length of Time (weeks)
	4. Aircraft Engineering Administration and Management Techniques			**26**
	4.1 Leadership and Management			
Location 8	***Description 8***			
	a) Discuss the various leadership qualities required of a leader including accountability, conflict management and resources management etc.	*CCO 1.9*	6	
	b) Explain the importance of accountability and responsibility required by a leader for making decisions on engineering activities.	*CCO 1.9*	6	
	c) Apply various management skills in engineering projects.	*CCO 1.9*	6	
	d) Distinguish the relationship between good leadership and good management skills.	*CCO 1.9*	6	
	e) Demonstrate an understanding of the importance of teamwork and partnering skills in engineering projects.	*CCO 1.9*	6	
	4.2 Technical and Commercial Leadership			
Location 9	***Description 9***			
	a) Apply maintenance error management methodology.	*CO 2.1*	9	
	b) Apply quality management concept for engineering projects.	*CO 2.1*	5	
	c) Apply concept for engineering process improvement.	*CO 2.1*	4	
	d) Apply appropriate project management tool for engineering projects.	*CO 2.1*	4	
	e) Apply appropriate financial management tool for engineering projects.	*CO 2.1*	6	
	f) Apply concept and knowledge of supply chain management for engineering projects	*CO 2.1*	6	
	g) Integrate the application of knowledge management for engineering projects.	*CO 2.1*	11	
	h) Comply with the occupational safety and health management standards and regulatory requirements.	*CO 2.1*	9	

Location where Training will be done	Training Outcomes	Previous Reference	HKIE Compe-tence Ref.	Length of Time (weeks)
	i) Apply the safety management system in accordance with the industry standards and regulatory requirements.	*CCO 1.5*	7	
	j) Evaluate the activities' impact to sustainable development.	*CO 2.1*	9	
	4.3 Interpersonal Skills			
Location 10	***Description 10***			
	a) Apply appropriate leadership qualities required for achieving desirable results.	*CO 2.2*	6	
	b) Apply appropriate interpersonal skills to achieve effective team building.	*CO 2.2*	6	
	c) Communicate effectively in written and oral manner.	*CO 2.2*	10	
	5. Objective Training			**26**
	This section covers any activities related to aircraft engineering. It should aim to develop skills and knowledge relating to personal qualities, communication, human resources management and business operational sense in addition to the technical, commercial and engineering knowledge acquired by the trainees during earlier parts of their training. Latest developments in the discipline should be included. All Training Outcomes, if not yet achieved in earlier parts of training, should be completed here.			
	6. Other Common Core Outcomes for Continuous Development			**Conti-nous**
	6.1 Development of Personal Qualities			
Location 11	***Description 11***			
	a) Identify appropriate innovative approach and/or tools for professional development.	*CCO 1.4*	11	
	b) Demonstrate interpersonal skills for professional development.	*CCO 1.4*	10	
	c) Demonstrate negotiating skills required for various engineering activities.	*CCO 1.4*	10	
	d) Demonstrate sound time management skills for professional development.	*CCO 1.4*	11	

Location where Training will be done	Training Outcomes	Previous Reference	HKIE Compe-tence Ref.	Length of Time (weeks)
	e) Demonstrate a commitment to continuous development and enhancement.	*CCO 1.4*	11	
	6.2 Communication			
Location 12	***Description 12***			
	a) Communicate ideas orally in an accurate and clear manner under various situations (including presentations and meetings).	*CCO 1.7*	10	
	b) Formulate an oral presentation of complicated data and information in an effective and persuasive manner.	*CCO 1.7*	10	
	c) Produce grammatically correct, clear and concise documents (including memos, letters, instructions, reports, resumes and technical papers) which meet the business objectives.	*CCO 1.7*	10	
	d) Evaluate the needs of the intended readers to design appropriate technical contents for communication.	*CCO 1.7*	10	
	6.3 Human Resources Management			
Location 13	***Description 13***			
	a) Demonstrate the awareness of the duties and employment criteria for different job positions in an engineering project.	*CCO 1.8*	6	
	b) Demonstrate an understanding of the relevant legal requirements and regulatory issues of labour employment and management.	*CCO 1.8*	6	
	c) Discuss the appropriate staff training and development programmes in the organisation.	*CCO 1.8*	6	
	6.4 Business Operations			
Location 14	***Description 14***			
	a) Recognise the importance of intellectual property to business operations.	*CCO 1.11*	11	
	b) Describe the legal requirements in Hong Kong relevant to intellectual property rights.	*CCO 1.11*	11	

Location where Training will be done	Training Outcomes	Previous Reference	HKIE Compe-tence Ref.	Length of Time (weeks)
	c) Identify appropriate tools and method to measure and improve the productivity of business operations.	*CCO 1.11*	11	
	d) Identify appropriate information technology applications to manage business information and to facilitate business operations.	*CCO 1.11*	11	
	e) Recognise the importance of research and development towards business operations.	*CCO 1.11*	11	
	f) Demonstrate the awareness of financial considerations in operating business.	*CCO 1.11*	11	
	g) Recognise the importance of business development in business operations.	*CCO 1.11*	11	

N.B.

1. The training period must not be less than 104 weeks (24 months).
2. The programme set out is for guidance only, but substantial departure should not be made. Employers should endeavour to provide training to their trainees in as many areas as possible as is appropriate to the sector of employment.
3. This guide should be read in conjunction with Section 3 of the M3 Routes to Membership.
4. During the training, each trainee is required to maintain a Graduate Training Log Book, Record of Continuing Professional Development and Record of Training Outcomes.