

**THE HONG KONG INSTITUTION OF ENGINEERS**  
**SCHEME “A” GRADUATE TRAINING**  
**CONSOLIDATED MODEL TRAINING GUIDE**  
**GAS ENGINEERING**

Location where Training will be done	Training Outcomes	Previous Reference	HKIE Competence Ref.	Length of Time (weeks)
	<b>1. Introduction</b>			<b>1</b>
	1.1 Information about the Company			
<b><i>Location 1</i></b>	<b><i>Description 1</i></b>			
	1.1.1. Own Organisation			
	a) Discuss the size, history and internal culture of the trainee’s own organisation.	<i>CCO</i> <i>1.10</i>	11	
	b) Discuss an overview of the relationship between the trainee’s own organisation, government departments and other organisations.	<i>CCO</i> <i>1.10</i>	11	
	c) Discuss the structure and functions of different units within the trainee’s own organisation.	<i>CCO</i> <i>1.10</i>	11	
	d) Demonstrate the awareness to follow operational procedures and practices as required by the trainee’s own organisation.	<i>CCO</i> <i>1.10</i>	11	
	e) Discuss the objectives, requirements and processes that support the quality assurance system within the trainee’s own organisation.	<i>CCO</i> <i>1.10</i>	11	
	f) Apply the quality assurance system according to the policy of the trainee’s own organisation.	<i>CCO</i> <i>1.10</i>	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.	<i>CCO</i> <i>1.10</i>	11	

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	<p>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.</p> <p>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.</p> <p>d) Demonstrate a commitment to participate in the local organisations or community services for general personal development.</p>	<p><i>CCO 1.2</i></p> <p><i>CCO 1.3</i></p> <p><i>CCO 1.3</i></p>	<p>11</p> <p>11</p> <p>11</p>	
	1.2 Information about the HKIE			
<b>Location 2</b>	<b>Description 2</b>			
	<p>a) Discuss an overview of the HKIE organisation as well as its history and role in society.</p> <p>b) Demonstrate a commitment to participate in relevant activities organised by the HKIE.</p>	<p><i>CCO 1.1</i></p> <p><i>CCO 1.1</i></p>	<p>11</p> <p>11</p>	
	<b>2. Engineer as a Profession</b>			<b>Continuous</b>
	2.1 Professionalism			
<b>Location 3</b>	<b>Description 3</b>			
	<p>a) Discuss the social and ethical responsibilities of engineers in society.</p>	<p><i>CCO 1.2</i></p>	<p>8</p>	

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	<p>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.</p> <p>c) Explain the ethical standards and responsibilities of professional engineers as required by the HKIE.</p> <p>d) Demonstrate the awareness to follow the codes of practice of professional engineers.</p> <p>e) Demonstrate the awareness to uphold the dignity, standing and reputation of the engineering profession.</p> <p>f) Demonstrate the awareness to protect the interests of the community including the environment, welfare, health and safety in conducting engineering activities.</p>	<p><i>CCO 1.2</i></p> <p><i>CCO 1.2</i></p> <p><i>CCO 1.2</i></p> <p><i>CCO 1.2</i></p> <p><i>CCO 1.2</i></p>	<p>8</p> <p>8</p> <p>8</p> <p>8</p> <p>8</p>	
	2.2 Occupational Safety and Health			
<b>Location 4</b>	<b>Description 4</b>			
	<p>a) Demonstrate an understanding of the statutory health and safety requirements.</p> <p>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.</p>	<p><i>CCO 1.5</i></p> <p><i>CCO 1.5</i></p>	<p>9</p> <p>9</p>	
	2.3 Environment			
<b>Location 5</b>	<b>Description 5</b>			
	<p>a) Demonstrate an understanding of the relevant statutory environmental requirements related to the trainee’s discipline.</p> <p>b) Evaluate the inter-relationship of technology with the environment in the work place.</p>	<p><i>CCO 1.6</i></p> <p><i>CCO 1.6</i></p>	<p>9</p> <p>9</p>	

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	c) Demonstrate the awareness of the impact of technology on the environment in society.	<i>CCO 1.6</i>	9	
<b>3. Discipline-Core Outcomes in Gas Engineering</b>				<b>77</b>
	To enable the trainee to acquire broad general gas engineering knowledge common to all the following three main streams: (1) Gas Production / Storage (2) Gas Transmission and Distribution Engineering (3) Gas Utilisation Engineering			
	3.1 Workshop Training			8
<b>Location 6</b>	<b>Description 6</b>			
	a) Demonstrate the ability to use hand, power and machine tools.	<i>New CO</i>	1	
	b) Recognise the sources and general properties of common engineering materials.	<i>New CO</i>	1	
	c) Recognise the working principle and application of computer-aided manufacturing (CAM).	<i>New CO</i>	1	
	3.2 Gas Production / Storage			10
<b>Location 7</b>	<b>Description 7</b>			
	3.2.1 Gas Production Processes			
	a) Comprehend gas production processes.	<i>CO 1.1</i>	1	
	b) Operate gas production processes.*	<i>CO 1.1</i>	1	
	3.2.2 Gas Analysis Techniques			
	a) Comprehend gas analysis techniques.	<i>CO 1.2 &amp; 1.3</i>	1	
	b) Apply gas analysis techniques.*	<i>CO 1.2 &amp; 1.3</i>	1	
	3.2.3 Production Plant Instrumentation and Control			
	a) Carry out the implementation of installation, testing and commissioning of production plant instrumentation and control system.	<i>CO 1.6</i>	1	

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	3.2.4 Safety Management System a) Apply the safety management system in accordance with the industry standards and regulatory requirements.	<i>CCO 1.5</i>	7	
	3.2.5 Project Planning and Management a) Compile the project planning and management processes.	<i>CO 1.13</i>	6	
	3.2.6 Risk and Environmental Assessment a) Analyse potential risks. b) Apply environmental assessment results.	<i>CO 1.10</i> <i>CO 1.10</i>	7 7	
	3.2.7 Legislation, codes and Procedures a) Comply with the Hong Kong gas legislation, regulations, codes of practice and safety procedures.	<i>CO 1.9</i>	2	
	3.3 Gas Transmission and Distribution Engineering			20
<b>Location 8</b>	<b>Description 8</b>			
	3.3.1 Design of Gas Supply System a) Carry out the design of supply systems.	<i>CO 1.4</i>	1	
	3.3.2 Installation, testing and commissioning of transmission and distribution pipes a) Carry out the implementation of installation, testing and commissioning of transmission, distribution, service and installation pipes.	<i>CO 1.5</i>	1	
	3.3.3 Transmission and Distribution Instrumentation a) Carry out the implementation of installation, testing and commissioning of transmission and distribution instrumentation system.	<i>CO 1.5</i>	1	

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Location where Training will be done	Training Outcomes	Previous Reference	HKIE Competence Ref.	Length of Time (weeks)
	3.3.4 Gas Pressure control system installation, testing and commissioning a) Carry out the implementation of installation, testing and commissioning of gas pressure control system.	<i>CO 1.6</i>	1	
	3.3.5 Project Planning and Management a) Compile the project planning and management processes.	<i>CO 1.13</i>	6	
	3.3.6 Risk and environmental assessment a) Analyse potential risks.	<i>CO 1.10</i>	7	
	b) Apply environmental assessment results.	<i>CO 1.10</i>	7	
	3.3.7 Legislation, codes and procedures a) Comply with the Hong Kong gas legislation, regulations, codes of practice and safety procedures.	<i>CO 1.9</i>	2	
	<b>3.4 Gas Utilisation Engineering</b>			<b>39</b>
<b>Location 9</b>	<b>Description 9</b>			
	3.4.1 Gas properties and combustion characteristics a) Categorise gas properties and combustion characteristics.	<i>CO 1.7</i>	1	
	3.4.2 Gas Applications a) Categorise gas applications.	<i>CO 1.12</i>	1	
	3.4.3 Gas measurement and metering systems a) Apply gas measurement and metering systems.	<i>CO 1.8</i>	1	
	3.4.4 Installation, testing and commissioning of service pipes. a) Carry out the implementation of installation, testing and commissioning of service pipes.	<i>CO 1.5</i>	1	
	3.4.5 Marketing and sales a) Demonstrate the awareness of financial considerations in operation business.	<i>CCO 1.11</i>	11	

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	<ul style="list-style-type: none"> <li>b) Recognise the importance of business development in business operations.</li> </ul>	<i>CCO 1.11</i>	11	
	3.4.6 Customer Service <ul style="list-style-type: none"> <li>a) Apply quality customer service practices.</li> </ul>	<i>CO 1.11</i>	1	
	3.4.7 Project Planning and Management <ul style="list-style-type: none"> <li>a) Compile the project planning and management processes.</li> </ul>	<i>CO 1.13</i>	6	
	3.4.8 Legislation, codes and procedures <ul style="list-style-type: none"> <li>a) Comply with the Hong Kong gas legislation, regulations, codes of practice and safety procedures.</li> </ul>	<i>CO 1.9</i>	2	
	<b>4. Consolidating Stage</b>			<b>26</b>
	<i>This section forms part of the training in the selected stream. One of the three streams of gas engineering could be selected for the trainee to proceed with at this stage. The training shall involve project work handled by the trainee plus in-depth study of the activities laid down below for the selected stream. The programme should aim to develop skills and knowledge needed to make an effective start. Special training on particular technology having a bearing on future work may be necessary. All Training Outcomes, if not yet achieved in earlier parts of training, should be completed here.</i>			
	4.1 Gas Production / Storage			
<b>Location 10</b>	<b>Description 10</b>			
	4.1.1 Gas plants siting and layout proposals <ul style="list-style-type: none"> <li>a) Analyse proposal(s) of gas plants siting and layouts.</li> <li>b) Design the layout of a gas plant.</li> <li>c) Comply with the applicable regulatory requirements in the process of gas plant siting and layout.</li> <li>d) Justify the solution of gas plants siting and layouts.</li> </ul>	<i>CO 2.1</i>	3	
		<i>CO 2.1</i>	4	
		<i>CO 2.1</i>	5	
		<i>CO 2.1</i>	12	

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	4.1.2 Gas plant design, construction, testing and commissioning			
	a) Analyse alternatives of gas plant design, construction, testing and commissioning.	<i>CO 2.1</i>	3	
	b) Develop plant design, construction, testing and commissioning processes.	<i>CO 2.1</i>	4	
	c) Comply with the applicable regulatory requirements in the process of gas plant design, construction, testing and commissioning.	<i>CO 2.1</i>	5	
	d) Justify the solution of gas plant design, construction, testing and commissioning.	<i>CO 2.1</i>	12	
	4.1.3 Gas plants operation and maintenance			
	a) Develop solutions to gas plants operation and maintenance problems.	<i>CO 2.1</i>	4	
	b) Comply with the applicable regulatory requirements in the process of gas plants operation and maintenance.	<i>CO 2.1</i>	5	
	c) Justify the solution of gas plants operation and maintenance.	<i>CO 2.1</i>	12	
	4.1.4 Gas Production Processes			
	a) Develop gas production processes.*	<i>CO 2.1</i>	4	
	b) Propose improvement to gas production processes.*	<i>CO 2.1</i>	4	
	4.1.5 Gas quality testing and control			
	a) Develop gas quality testing and control.*	<i>CO 2.1</i>	4	
	b) Propose improvement to gas quality testing and control.*	<i>CO 2.1</i>	4	
	4.1.6 Control and Instrumentation for Plants			
	a) Develop control and instrumentation for plants.	<i>CO 2.1</i>	4	

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	<ul style="list-style-type: none"> <li>b) Propose improvement to control and instrumentation for plants.</li> </ul>	<i>CO 2.1</i>	4	
	4.1.7 Electrical Supply Systems for Plants <ul style="list-style-type: none"> <li>a) Develop electrical supply systems for plants.</li> <li>b) Propose improvement to electrical supply systems for plants.</li> </ul>	<i>CO 2.1</i>	4	
	4.1.8 Plant Protection Systems and Testing <ul style="list-style-type: none"> <li>a) Develop plant protection systems and testing.</li> <li>b) Propose improvement to plant protection systems and testing.</li> </ul>	<i>CO 2.1</i>	4	
	4.1.9 Plant safety management and environmental management systems <ul style="list-style-type: none"> <li>a) Propose improvement to plant safety and environmental management systems.</li> </ul>	<i>CO 2.1</i>	4	
	4.2 Gas Transmission and Distribution Engineering			
<b>Location 11</b>	<b>Description 11</b>			
	4.2.1 Network Design <ul style="list-style-type: none"> <li>a) Analyse gas transmission and/or distribution network design.</li> <li>b) Design gas transmission and/or distribution network.</li> <li>c) Comply with the applicable regulatory requirements in the process of network design.</li> <li>d) Justify the solution of gas transmission and/or distribution network design.</li> </ul>	<i>CO 2.2</i>	3	
		<i>CO 2.2</i>	4	
		<i>CO 2.2</i>	5	
		<i>CO 2.2</i>	12	

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	<p>4.2.2 Installation, testing, commissioning, operation, maintenance and control of transmission and/or distribution pipeline system</p> <p>a) Develop the processes for installation, testing, commissioning, operation and maintenance of transmission and/or distribution system.</p> <p>b) Comply with the applicable regulatory requirements in the process of installation, testing, commissioning, operation and maintenance of transmission and/or distribution system.</p> <p>c) Justify the solution of the installation, testing, commissioning, operation and maintenance of transmission and/or distribution system.</p> <p>4.2.3 Design Installation, Testing and Commissioning and Maintenance of Pressure Control System</p> <p>a) Develop the design, installation, testing and commissioning and maintenance of pressure control system.</p> <p>b) Comply with the applicable regulatory requirements in the process of design, installation, testing and commissioning and maintenance of pressure control system.</p> <p>c) Justify the solution of the design, installation, testing and commissioning and maintenance of pressure control system.</p>	<p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p>	<p>4</p> <p>5</p> <p>12</p> <p>4</p> <p>5</p> <p>12</p>	

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	<p>4.2.4 Knowledge, application and upkeeping of Supervisory Control and Data Acquisition (SCADA) System</p> <p>a) Appraise knowledge, application and upkeeping of Supervisory Control and Data Acquisition (SCADA) System.*</p>	<i>CO 2.2</i>	4	
	<p>4.2.5 Knowledge, application and upkeeping of pipeline automated mapping / facilities management system.</p> <p>a) Appraise knowledge, application and upkeeping of pipeline automated mapping / facilities management system.*</p>	<i>CO 2.2</i>	4	
	<p>4.2.6 Gas measurement and metering systems design, installation and maintenance</p> <p>a) Assess gas measurement and metering systems design.</p> <p>b) Propose improvement on gas measurement and metering installation and maintenance processes.</p>	<i>CO 2.2</i>	4	
	<p>4.2.7 Siting and layout proposals of Pressure Regulation Station and Pigging Station</p> <p>a) Analyse proposal(s) of siting and layout of Pressure Regulation Station and/or Pigging Station.*</p>	<i>CO 2.2</i>	3	
	<p>b) Design the layout of Pressure Regulation Station and/or Pigging Station.*</p>	<i>CO 2.2</i>	4	
	<p>c) Comply with the applicable regulatory requirements in the process of siting and layout of Pressure Regulation Station and/or Pigging Station.*</p>	<i>CO 2.2</i>	5	
	<p>d) Justify the solution of the siting and layout of Pressure Regulation Station and/or Pigging Station.*</p>	<i>CO 2.2</i>	12	

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	<p>4.2.8 Design, Construction, Testing, Commissioning and Operation of Pressure Regulation Station and Pigging Station</p> <p>a) Develop the processes for design, construction, testing, commissioning and operation of Pressure Regulation Station and/or Pigging Station.*</p> <p>b) Comply with the applicable regulatory requirements in the process of design, construction, testing, commissioning and operation of Pressure Regulation Station and/or Pigging Station.*</p> <p>c) Justify the solution of the design, construction, testing, commissioning and operation of Pressure Regulation Station and/or Pigging Station.*</p>	<p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p>	<p>4</p> <p>5</p> <p>12</p>	
	<p>4.2.9 Gas Leakage Survey, Repairs and Maintenance of Pipelines</p> <p>a) Carry out investigation on gas leakage.</p> <p>b) Propose solution for pipelines repair and maintenance.</p> <p>c) Assess different gas leakage survey techniques.</p>	<p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p>	<p>3</p> <p>4</p> <p>3</p>	
	<p>4.2.10 Emergency Handling and Crisis Management</p> <p>a) Formulate the emergency handling and crisis management process.</p> <p>b) Carry out implementation of emergency response procedures.</p>	<p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p>	<p>4</p> <p>4</p>	

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	<p>4.2.11 Design, Construction and Testing of Pressure Vessel for Local Distribution.</p> <p>a) Develop the processes for design, construction and testing of pressure vessel.*</p> <p>b) Comply with the applicable regulatory requirements in the process of design, construction and testing of pressure vessel.*</p> <p>c) Justify the solution of the design, construction and testing of pressure vessel.*</p> <p>4.2.12 Design, construction and testing of gas transportation vehicles.</p> <p>a) Develop the processes for design, construction and testing of gas transportation vehicles.*</p> <p>b) Comply with the applicable regulatory requirements in the process of design, construction and testing of gas transportation vehicles.*</p> <p>c) Justify the solution of the design, construction and testing of gas transportation vehicles.*</p> <p>4.2.13 Handling and transportation of compressed gases and liquefied gases</p> <p>a) Develop programme for handling and transportation of compressed gases and liquefied gases.*</p> <p>4.2.14 Siting and Layout Proposals of Storage / Distribution Systems of Liquefied Gases</p> <p>a) Analyse proposal(s) of siting and layout of storage / distribution systems of liquefied gases.*</p> <p>b) Design the layout of storage / distribution systems of liquefied gases.*</p>	<p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p> <p><i>CO 2.2</i></p>	<p>4</p> <p>5</p> <p>12</p> <p>4</p> <p>5</p> <p>12</p> <p>5</p> <p>3</p> <p>4</p>	

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	<ul style="list-style-type: none"> <li>c) Comply with the applicable regulatory requirements in the process of storage / distribution systems of liquefied gases.*</li> <li>d) Justify the solution of the siting and layout of storage / distribution systems of liquefied gases.*</li> </ul>	CO 2.2	5	
	<p>4.2.15 Design, construction, testing, commissioning and operation of storage / distribution systems of liquefied gases</p> <ul style="list-style-type: none"> <li>a) Develop the processes for design, construction, testing, commissioning and operation of storage / distribution systems of liquefied gases.*</li> <li>b) Comply with the applicable regulatory requirements in the process of design, construction, testing, commissioning and operation of storage / distribution systems of liquefied gases.*</li> <li>c) Justify the solution of the design, construction, testing, commissioning and operation of storage / distribution systems of liquefied gases.*</li> </ul>	CO 2.2	4	
		CO 2.2	5	
		CO 2.2	12	
	<b>4.3 Gas Utilisation Engineering</b>			
<b>Location 12</b>	<b>Description 12</b>			
	<p>4.3.1 Gas appliances, equipment and control design and application</p> <ul style="list-style-type: none"> <li>a) Analyse alternatives of gas appliances, equipment and control design and application.</li> <li>b) Develop gas appliances, equipment and control design and application.</li> </ul>	CO 2.3	3	
		CO 2.3	4	

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	<ul style="list-style-type: none"> <li>c) Comply with the applicable regulatory requirements in the process of gas appliances, equipment and control design and application.</li> <li>d) Justify the solution of gas appliances, equipment and control design and application.</li> </ul>	<p><i>CO 2.3</i></p> <p><i>CO 2.3</i></p>	<p>5</p> <p>12</p>	
	<p>4.3.2 Installation, commissioning and testing of gas appliances, equipment and control systems</p> <ul style="list-style-type: none"> <li>a) Develop the processes of installation, commissioning and testing of gas appliances, equipment and control systems.</li> <li>b) Comply with the applicable regulatory requirements in the process of installation, commissioning and testing of gas appliances, equipment and control systems.</li> <li>c) Justify the solution of installation, commissioning and testing of gas appliances, equipment and control systems.</li> </ul>	<p><i>CO 2.3</i></p> <p><i>CO 2.3</i></p> <p><i>CO 2.3</i></p>	<p>4</p> <p>5</p> <p>12</p>	
	<p>4.3.3 Gas flue systems design installation and testing</p> <ul style="list-style-type: none"> <li>a) Develop gas flue systems design installation and testing.</li> </ul>	<p><i>CO 2.3</i></p>	<p>4</p>	
	<p>4.3.4 Gas measurement and metering system design and installation</p> <ul style="list-style-type: none"> <li>a) Develop gas measurement and metering system design and installation.</li> </ul>	<p><i>CO 2.3</i></p>	<p>4</p>	
	<p>4.3.5 Appliance and control system, fault diagnosis, repair and maintenance</p> <ul style="list-style-type: none"> <li>a) Carry out investigation on appliance faults.</li> </ul>	<p><i>CO 2.3</i></p>	<p>3</p>	

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Location where Training will be done	Training Outcomes	Previous Reference	HKIE Competence Ref.	Length of Time (weeks)
	b) Propose solution for appliance repair and maintenance.	<i>CO 2.3</i>	4	
	4.3.6 Emergency handling a) Carry out implementation of emergency response procedures.	<i>CO 2.3</i>	3	
	4.3.7 Quality Customer Services a) Propose improvement on quality customer service.	<i>CO 2.3</i>	4	
	<b>5. Other Common Core Outcomes for Continuous Development</b>			<b>Continuous</b>
	5.1 Leadership Qualities			
<b>Location 13</b>	<b>Description 13</b>			
	a) Discuss the various leadership qualities required of a leader including accountability, conflict management and resources management etc.	<i>CCO 1.9</i>	6	
	b) Explain the importance of accountability and responsibility required by a leader for making decisions on engineering activities.	<i>CCO 1.9</i>	6	
	c) Apply various management skills in engineering projects.	<i>CCO 1.9</i>	6	
	d) Distinguish the relationship between good leadership and good management skills.	<i>CCO 1.9</i>	6	
	e) Demonstrate an understanding of the importance of teamwork and partnering skills in engineering projects.	<i>CCO 1.9</i>	6	
	5.2 Development of Personal Qualities			
<b>Location 14</b>	<b>Description 14</b>			
	a) Identify appropriate innovative approach and/or tools for professional development.	<i>CCO 1.4</i>	11	
	b) Demonstrate interpersonal skills for professional development.	<i>CCO 1.4</i>	10	
	c) Demonstrate sound time management skills for professional development.	<i>CCO 1.4</i>	11	
	d) Demonstrate a commitment to continuous development and enhancement.	<i>CCO 1.4</i>	11	

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Location where Training will be done	Training Outcomes	Previous Reference	HKIE Competence Ref.	Length of Time (weeks)
	5.3 Preparation of reports, procedures and manuals of construction, installation, testing, commissioning, operation and maintenance.			
<b>Location 15</b>	<b>Description 15</b>			
	a) Produce grammatically correct, clear and concise document (including memos, letters, instructions, reports, resumes and technical papers) which met the business objectives.	<i>CCO 1.7</i>	10	
	b) Evaluate the needs of the intended readers to design appropriate technical contents for communication.	<i>CCO 1.7</i>	10	
	5.4 Conducting technical presentation, sales and contract negotiation.			
<b>Location 16</b>	<b>Description 16</b>			
	a) Demonstrate negotiating skills required for various engineering activities.	<i>CCO 1.4</i>	10	
	5.5 Knowledge of general administration including financial management, human resources, social awareness, marketing technique etc.			
<b>Location 17</b>	<b>Description 17</b>			
	5.5.1 Human Resources Management			
	a) Demonstrate the awareness of the duties and employment criteria for different job positions in an engineering project.	<i>CCO 1.8</i>	6	
	b) Demonstrate an understanding of the relevant legal requirements and regulatory issues of labour employment and management.	<i>CCO 1.8</i>	6	
	c) Discuss the appropriate staff training and development programmes in the organisation.	<i>CCO 1.8</i>	6	
	5.5.2 Business Operations			
	a) Recognise the importance of intellectual property to business operations.	<i>CCO 1.11</i>	11	

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	b) Describe the legal requirements in Hong Kong relevant to intellectual property rights.	<i>CCO 1.11</i>	11	
	c) Identify appropriate tools and method to measure and improve the productivity of business operations.	<i>CCO 1.11</i>	11	
	d) Identify appropriate information technology applications to manage business information and to facilitate business operations.	<i>CCO 1.11</i>	11	
	e) Recognise the importance of research and development towards business operations.	<i>CCO 1.11</i>	11	
	5.6 Development of communication skills in verbal and written Chinese and English.			
<b>Location 18</b>	<b>Description 18</b>			
	a) Communicate ideas orally in an accurate and clear manner under various situations (including presentations and meetings).	<i>CCO 1.7</i>	10	
	b) Formulate an oral presentation of complicated data and information in an effective and persuasive manner.	<i>CCO 1.7</i>	10	

\*Only applicable to companies with the type of specific operation available.

**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.