

## TECHNICAL NOTES PART II

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This Guide is designed for SSG's Training Providers (TPs) and Adult Educators who are responsible for the design and delivery of the "Operate Lorry Crane" program within the Logistics Competency Category of the Generic Manufacturing Skills (GMS) WSQ Framework.

This Guide aims to provide essential curriculum, training and assessment design advisory information, to guide developers, trainers and assessors in the interpretation and translation of the competency standard "Operate Lorry Crane" into training and assessment programme.

The Guide also contains training and assessment requirements stipulated by industry, and WSQ accreditation information for compliance.

It is divided into 2 parts:

**Part I** - Details specific recommendations and advice for developers of the "Operate Lorry Crane" programme.

**Part II** - Provides a broad spectrum of information about WSQ and related components relevant to the "Operate Lorry Crane" programme.

# **PART I**

## **WSQ Operate Lorry Crane**

# CHAPTER 1: OPERATE LORRY CRANE

## 1.1 Overview

The Generic Manufacturing Skills (GMS) WSQ framework aims to raise the professionalism of the manufacturing industry by equipping the workforce with essential generic and portable skills to adapt and be resilient to challenges in the dynamic working environment. It allows employers to access a pipeline of skilled workforce, which provides a competitive advantage and enables organisation success. It also equips workers with cross-cutting generic manufacturing skills to effectively contribute and progress within an organisation as well as promote mobility across manufacturing companies.

“Operate Lorry Crane” is a Competency Unit under the Logistics Competency Category. The Competency Elements covered are:

CE 1	Conduct Routine Checks
CE 2	Plan for Lifting Operations
CE 3	Set Up Crane
CE 4	Lift and Transfer Load
CE 5	Shut Down and Secure Crane

## 1.2 Target Audience

The Operate Lorry Crane Course is suitable for aspiring and experienced individuals who are required to operate a lorry crane in lifting operations. Learners are assumed to have:

- Employability Skills System (ESS) Workplace Literacy and Numeracy (WPLN) Level 3 and above, or equivalent
- Ability to read and understand manufacturer’s instructions, procedures and safety signs
- Have a good sense of “situational awareness” and safety consciousness

## 1.3 Recommended Learning Hours (RLH)

	Duration	Remarks
Facilitated Learning	16 hours	
Assessment Only Pathway	NA	Experienced Lorry Crane Operators with certificate of training issued by manufacturers or training providers or Employer’s letter to testify that operator has at least 3 years of experience in lorry crane operations.
Assessment	2 hours	

## 1.4 Recommended Class Size and Facilitator-Learner Ratio

Classroom : 1 : 12  
Practical : 1 : 6

## 1.5 Recommended Assessor to Candidate Ratio

Written Assessment: 1 : 12 (Class size) Practical  
: 1 : 1  
Oral Questioning : 1 : 1

## 1.6 Attendance requirements

Minimum 75% for classroom sessions  
100% for practice sessions

# CHAPTER 2: KEY DELIVERY ADVICE

## 2.1 Content Coverage

This unit covers the following Underpinning Knowledge which could be taught in the classroom via a combination **of lectures, discussions and case-studies.**

- Legislation on lifting operations  
may include but not limited to
  - Workplace Safety and Health Act
  - WSH (General Provisions) Regulations 2006
  - WSH (Operation of Cranes) Regulations 2011
  - LTA Regulations concerning Lifting Equipment
  - Codes of Practice for Traffic Control at Work Zone, LTA Regulations
  - WSH Guidelines (Landscape and Horticulture works)
  - Permit-to-Work
- Roles and responsibilities of personnel in lifting operations  
may include but not limited to
  - Contractor
  - Lifting Team
  - Rigger
  - Signaller
  - Lifting Supervisor
  - Lifting equipment operator
- Fundamentals of Lorry Crane Operations  
may include but not limited to
  - Types of lorry crane and its work equipment / accessories
  - Main components of a lorry crane
  - Safety devices and controls
  - Signage and labels
  - Daily functional Checks and maintenance of lorry crane and accessories
- Safe work practices
  - Hazards related to lorry crane operation and related control measures  
may include but not limited to
    - Ground stability
    - Overhead hazards
    - Insufficient lighting
    - Traffic
    - The hierarchy of control
    - Personal Protective Equipment
    - Load estimation and centre of gravity
  - may include but not limited to
    - Truck axle
    - Fully filled drum
    - Concrete block
    - Metal scaffolding

- Bundle metal pipes
- Wire mesh
- Rectangular steel plate
- Irregular shaped load
- Pallets
  - Propeller
- Rigging and Signaling
- \*\*Risk Assessment
  - Lifting Plan (Identify, Evaluate and Control Risk)
  - Permit to Work
- Communication methods and equipment
- Standard Operating procedures
  - Pre operation checks
  - Recording and reporting procedures for damage and defects
  - Hazard prevention and control measures
  - Lorry Crane configuration
  - Ground assessment
  - Lifting load
  - Transferring load
  - Transporting load
  - Stow and secure crane and equipment
  - Stow and secure outriggers
  - Stow and secure plates or packing
  - Shut down procedures
  - Routine post-operation checks
  - Recording and reporting procedures for damage and defects
- Emergency response procedures

\*\*The Risk Assessment process should consider the management of infectious disease outbreak, employees' health (including mental well-being) and terrorist threats. Training Provider should take reference from the 3rd revision of the Code of Practice on Risk Management."



The unit also covers the following Performance Criteria: These would best be taught via a combination of **lecture, demonstrations and hands-on practice.**

<p><b>CE 1 Conduct Routine Checks</b></p> <p>1.1 Check lorry crane visually for any damage or defects</p> <p>1.2 Check that all signage and labels are visible and legible according to the appropriate standard</p> <p>1.3 Carry out routine pre-operation checks according to procedures</p> <p>1.4 Record and report all damage and defects according to procedures, and take appropriate action</p>
<p><b>CE 2 Plan for Lifting Operations</b></p> <p>2.1 Confirm work task with appropriate personnel</p> <p>2.2 Estimate the weight of the load in consultation with appropriate personnel</p> <p>2.3 Confirm that crane is appropriate to the load/s and workplace conditions</p> <p>2.4 Confirm details of the lifting plan with appropriate personnel</p> <p>2.5 Inspect and determine the appropriate path for the movement of loads in the work area</p> <p>2.6 Identify potential workplace hazards</p> <p>2.7 Adopt control measures consistent with appropriate standards to ensure the safety of personnel and equipment</p> <p>2.8 Identify appropriate communication methods with appropriate personnel</p>
<p><b>CE 3 Set Up Crane</b></p> <p>3.1 Check ground suitability</p> <p>3.2 Position crane for work application and stability according to procedures</p> <p>3.3 Determine appropriate crane configuration for work task according to procedures (where applicable)</p> <p>3.4 Apply appropriate hazard prevention/control measures to the work area according to procedures</p> <p>3.5 Test all communications equipment for functionality</p>
<p><b>CE 4 Lift and Transfer Load</b></p> <p>4.1 Determine that lifts are within the capacity of the crane by using a load chart</p> <p>4.2 Select rigging equipment</p> <p>4.3 Carry out pre-lift inspection of lifting accessories</p> <p>4.4 Position boom/jib and hoist block over load following directions from appropriate personnel</p> <p>4.5 Carry out test lift according to procedures</p> <p>4.6 Transfer loads using all relevant lorry crane movements according to procedures and the appropriate standard</p> <p>4.7 Interpret all required communication signals correctly according to procedures and the appropriate standard</p> <p>4.8 Monitor load movement to ensure safety to personnel and load, and lorry crane stability</p> <p>4.9 Respond to emergencies in line with procedures</p>
<p><b>CE 5 Shut Down and Secure Crane</b></p> <p>5.1 Stow and secure loader arm and equipment according to procedures</p> <p>5.2 Stow and secure outriggers/stabilisers according to procedures (where applicable)</p> <p>5.3 Shut down crane according to procedures</p> <p>5.4 Stow and secure plates or packing (where applicable)</p> <p>5.5 Carry out routine post-operational crane checks according to procedures</p> <p>5.6 Record and report all damage and defects according to procedures, and appropriate action is taken</p>

## 2.2 Sequence of Coverage

The following sequence is recommended:

Day One	Classroom (covering Underpinning Knowledge and Theory)
Day Two	Hands on practice of Competency Elements and Performance Criteria (covering skills and attitudes)

## 2.3 Recommended Learning Strategies and Methods

To enhance the transfer of learning, an andragogical or adult-learning approach to learning is encouraged in the development and delivery of the Competency Unit. Andragogical instructional techniques are designed with these factors in mind:

- Adults are self-directed
- Adults have acquired knowledge and experience through the workplace that can be utilised as a resource for learning
- Adults show a greater readiness to learn tasks that are relevant to their work roles
- Adults are motivated to learn in order to solve problems and address needs
- Adults expect to be able to apply what they learn
- Adults need to be challenged with varied strategies that maintain interest

This unit may be delivered in a combination of on-the-job (Or simulated environment) and off-the-job.

- Content relating to underpinning knowledge and principles may be delivered off-the-job. Off-the-job delivery can be face-to-face in the classroom in a training organisation, or at a workplace venue. Classroom delivery should be interactive and learner-centred, using a range of activities and instructional methods.
- The practical aspects of the Competency Unit, however, should be delivered on-the-job or in simulated workplace settings.

All training delivery should be related to the normal work process and every effort should be made to link the acquisition and application of the knowledge, skills and attitudes to the workplace.

Suggestions for delivery of this Competency Unit are given below:

<b>Competency</b>	<b>Instructional Methods</b>	<b>Remarks</b>
Underpinning Knowledge	Lectures, discussions, case studies, problem-based learning, videos, e-learning resources	<p>The knowledge component of this course is primarily focused on the requirements of the WSH Act, WSH (Operation of Cranes) Regulations 2011 and Codes of Practices and Guidelines concerning lifting operations. There is also some degree of computation and key points on the use of lorry crane.</p> <p>These can be delivered in a classroom using models (with a recommended scale of 1:12) and slides.</p>
Competency Elements / Performance Criteria	Lectures, demonstrations, practise	<p>The demonstration and practice may include the following key skills:</p> <ul style="list-style-type: none"> <li>• Conduct pre-operation check, job planning, crane set-up, safe crane operation and crane shut-down</li> <li>• Check proper slinging and rigging practices</li> <li>• Conduct inspection of lifting gear and accessories to ensure safe usage</li> <li>• Load / unload materials onto the lorry crane safely</li> <li>• Lift and place materials using the lorry crane safely</li> <li>• Respond to lifting accidents and emergencies</li> </ul>
Attributes	Discussions, modelling, sharing	<p>A competent Lorry Crane Operator should be able to identify and mitigate potential risk pertaining to his area of work. He is required to exercise his professionalism with a sense of "situational awareness" at any workplace. At all times he must</p> <ul style="list-style-type: none"> <li>• Be aware of all movements within the vicinity of the crane</li> <li>• Be in full control of the whole crane operations</li> <li>• Be quick to react to any sign of danger to the crane operations</li> </ul>

## 2.4 Facilitator's guide and Learner's guide and handouts

The TP is required to prepare a facilitator's guide for the course. The guide provides the facilitator with information on the course including

- Course aim
- Learning objectives
- Target audience
- Assumed skills and knowledge
- Course duration
- Class size and trainer/trainee ratio
- Lesson plan
- Course contents and instructional materials
- Training methodologies
- Training resource requirements
- Course administration instruction

To facilitate the learning process, it is recommended that the TP provided each trainee with a participant's workbook or handouts. This set of notes should contain the course aim, learning objectives and the key learning points (WSHA 2006, subsidiary legislations, industrial code of practice, safety guidelines etc) as well as guides for learning activities including safe use of cranes.

The TP is required to submit a cross reference matrix (see Annex B) to show that the courseware submitted is aligned to the requirements of the NCS / CTAG.

The TP is to ensure that materials used for the training does not infringe on patent, design, copyright and intellectual property rights.

The TP shall maintain a version control of updates made to the course materials for verification by the relevant authorities.

## 2.5 Training resources

- Relevant legislation
- Photos/slides of the various types of crane operations
- Lorry crane operation manual and load chart
- Case studies relating to lifting operation accidents involving lorry crane and aerial work platform
- Models of different types of lorry cranes
- Training videos
- Others

### 2.5.1 Total WSH Presentation Slides

- Total WSH presentation slides will be issued upon approval of the Training Provider.

The materials are provided strictly for the explicit use and guidance of training providers for the conduct of this course. Any other use of the materials or parts thereof, reproduction, publication, distribution, transmission, re-transmission, or storage in a retrieval system in any form, electronic or otherwise, for purposes other

than that expressly stated above without the express permission of WSH Council is strictly prohibited.

#### 2.5.2 Training Provider Requirements

Training Providers are required to fulfill the following requirements:

- ISO 29993 certification;
- bizSAFE Level 3 certification;
- Blended learning

Have developed an SOP to conduct online training and assessment (with online proctoring for supervisor and above courses) when required to do so.

For each WSH course, the Training Provider must have at least:

- a. 1 full time Principal/Director;
- b. 1 full time WSH Approved Adult Educator/ Trainer/Facilitators for each WSH course; and
- c. 2 approved full time/associate Adult Educator/ Trainer/Facilitators for each of the language.

Training Providers are to inform the WSH Council when they withdraw their training provider status for any WSH course(s); or have their status suspended or terminated by any authority.

Training Providers are to comply with the instruction by either (l) SkillsFuture Singapore (SSG), Ministry of Manpower (MOM) or the WSH Council to stop conducting any WSH Course(s) when an investigation is ongoing; or a non-compliance is being verified. Further actions would be taken when fraudulent acts or significant non-compliances are established.

## 2.6 Training venue requirements

The TP shall ensure that the classroom used for this training has adequate seating. Facilities inclusive of writing tables must be reasonably and comfortably spaced so as to be conducive to the learning process and for the purpose of conducting the assessment. Classrooms must be equipped with projectors, whiteboards, flipcharts and specific training aides related to the course. The classroom must be adequately illuminated and ventilated. Emergency exit signs and routings must be clearly demarcated and briefed to all the course participants at the start of the course.

Arrangements may be made for trainees to go on-site for a practical demonstration to practice and observe actual lorry crane operation in progress. This on-site training would help to promote experiential learning which forms a necessary part of the skills component training. A briefing should be conducted before each practical session on the expected role(s) of the trainees to ensure safe lifting operations. The well-being of the trainees should be considered when planning and conducting the practical sessions (e.g. heat, vehicle exhaust fumes...).

The TP shall carry out risk management of the site used for demonstration and practice. Trainees should be briefed on the risk of the training prior to the conduct of training. There should be close supervision of the trainees during the practical sessions in line with safe work procedures.

2.6.1 Unless prior approval has been granted by the CB, which had certified its WSH courses, each TP shall maintain and conduct its WSH course at its primary Training Venue. In addition, the TP shall ensure that the following are not shared with any other TP:

- (a) their approved Training Venue/s; and
- (b) Any other equipment or loads, which are used for the conduct of the WSH course.

2.6.2 In the event, where the TP wishes to conduct its WSH theory course(s) at a venue, other than the approved Training Venue, the TP must inform the CB, which had certified its WSH course(s) at the approved Training Venue/s, of its intent to effect such a change, and it must also demonstrate to the CB that:

- (a) It has an approved Training Venue at the registered address;
- (b) That the proposed venue is conducive for learning; and
- (c) That there are no safety and health concerns in relation to the proposed venue/s.

The TP may conduct its WSH theory course(s) at a venue other than the approved Training Venue/s only after obtaining the CB's approval.

2.6.3 The requirement stated at Para 2.6.2 shall apply to a TP for single and multiple usage.

2.6.4 Where the CB has granted approval to the TP to conduct the WSH theory course(s) at an alternate venue, the TP must ensure that:

a) All training and assessment records are kept by the TP, for courses conducted, at the alternate venue. Such records shall include the following documents:

- i. Photographs of the alternate venue;
- ii. Photographs of the WSH theory course(s) being conducted at the alternate venue;
- iii. Layout plan of the alternate venue; and
- iv. Leasing documents;

b) The records mentioned in sub-paragraph 2.6.4(a) above, are continually updated;

c) The alternate venue is only used for the conduct of WSH theory course(s). No practical training/assessment shall be allowed at the alternate venue, unless approval has been granted by the Authorities; and

d) The alternate venue is not occupied and or used by another TP or WSH approved training provider at any time.

2.6.5 The TP must ensure that all Training Venues (including alternate venues) have been approved by the Urban Redevelopment Authority (URA) or the Housing & Development Board ("HDB"), either as a Commercial School (theory based only) or for Industrial Training (theory and practical), before it applies to be certified by the CB.

Note: Tenancy agreement (e.g. from JTC Corporation or other Developers) does not constitute a URA approval. Only correspondence with letterheads bearing the office of the relevant government authorities granting the approval shall be recognised.

2.6.6 Paragraph 2.6.5 shall not apply to TP who is applying for a once –off use of the theory training premises.

2.6.7 The TP is to note that a CB's approval of any practical training venue is conditioned upon its safe and adequacy of the training facilities and equipment. The TP shall comply with all relevant legislations including but not limited to legislations involving land use, building, fire and safety.

## 2.7 Standard Loads

TPs are required to prepare at least five standard types of loads to be made available for the practical training. These include:

- Skip
- Valve
- Motor
- Propeller
- Oil drum
- Pallets
- Concrete beam
- Bundle of pipes
- Wire mesh
- Metal scaffold frame

- Rectangular steel plate
- Irregular shaped load (e.g. L-shape slab/pipe, tree trunk/branch)



## CHAPTER 3: KEY ASSESSMENT ADVICE

### 3.1 General guidelines for conducting competency-based assessment

The aim of the assessment plan is to determine the competence of the candidate to undertake the role of a Lorry Crane Operator upon successful completion the “Operate Lorry Crane” Course. TPs are required to prepare an assessment plan for the course (refer Annex C for template).

The assessment plan must be directly related to all the learning objectives determined in the course. It comprises four main parts:

- Overview of the assessment tools and its duration
- Instructions for the conduct of the assessment
- Instruments or tools of assessment (Question paper, checklist)
- Assessment summary record

The assessment plan is subject to review on an annual basis by the TP to ensure that trainees are constantly kept current and competent to perform up to the industrial requirements.

### 3.2 Principles of assessment

The assessment plan should be valid, reliable, fair and flexible.

- Valid – Are the assessment methods and tools appropriate and effective? Are the evidence collected relevant to the training?
- Reliability – Are the results consistent from one assessment to another?
- Fair – Are the assessment criteria clear? Do all the trainees know what to expect from the assessment? Will the assessment disadvantage any trainee? Do the trainees have any recourse for appeals?
- Flexibility – Can the assessment be used for multiple assessments? Are the assessment tools and methods uniform across different approaches and drawing on a range of different methods? Can they be used appropriately to the context, task and individual under assessment?

### 3.3 Recommended Assessment Strategies and Methods

Listed below are the assessment methods that can be used to assess the performance criteria and underpinning knowledge of WSQ “Operate Lorry Crane”.

Written Assessment / Case Study
Practical Performance
Interview/ Oral Questioning

Written Assessment (WA) / Case Study (CS) – This method of assessment is fast and the most convenient to conduct. It can be used for a large class over a wide range of knowledge based subjects. The written assessment can be in the form of a Multiple Choice Questionnaire (MCQ) or fill in the blanks.

Practical Performance (PP) – This method is highly recommended for skills assessment. It can be matched very closely to the actual task to be performed by the individual on the job.

Interview / Oral Questioning (OQ) – This method allows assessors to verify, in a face-to-face situation, the candidates understanding of the underpinning knowledge and the critical processes involved in a given task.

Suggested combinations are:

Method	Option One		Option Two		Option Three	
Written Assessment	√	1 hour	√	½ hour	X	NIL
Practical Performance	√	1 hour	√	1 hours	√	1 hours
Oral Questioning	X	NIL	√	½ hour	√	1 hour

### 3.4 Conduct of Assessment

The assessment must be conducted strictly in accordance with the assessment plan. In particular, each candidate must complete all the assessment requirements within the time allocated. A judgment on the competence of the candidate must be made based on the evidence gathered. The evidence for each of the assessment instrument can be collected from the outcomes of the WA and PP / OQ.

The number of attempts a candidate is allowed to be assessed in the written assessment is ONE. The candidate certified “NOT YET COMPETENT” after the assessment must be re-coursed.

During the administration of the written assessment, there shall be an assessor to ensure the integrity of the assessment process. The trainer for the course is not permitted to be the assessor for the same course during the assessment. An invigilator can be appointed in place of the assessor, but the trainer for the course must be on standby to make clarification on the questions where needed.

### 3.4.1 Option One

The time allocated for the Written Assessment (WA) is 1 hour. Time allocated for Practical Performance (PP) is 1 hour. The assessment components (WA and PP) are compulsory.

#### 3.4.1.1 Written Assessment

Section	Topic	No. of Questions
Section A : MCQ	Rigging and signaling	5
	Remaining topics	20
Section B : Questions	Section B : Load chart interpretation	5

**Note:**

**Candidates are allowed to attempt the practical performance only after being assessed as competent ("C") in the written assessment.**

#### 3.4.1.2 Practical Performance

The candidate should be assessed as to whether he is "Competent" ("C") or "Not Yet Competent" ("NYC") through practical performance of all the competency elements.

<b>CE 1 Conduct Routine Checks</b> 1.1 Check lorry crane visually for any damage or defects 1.2 Check that all signage and labels are visible and legible according to the appropriate standard 1.3 Carry out routine pre-operation checks according to procedures 1.4 Record and report all damage and defects according to procedures, and take appropriate action
<b>CE 2 Plan for Lifting Operations</b> 2.1 Confirm work task with appropriate personnel 2.2 Estimate the weight of the load in consultation with appropriate personnel 2.3 Confirm that crane is appropriate to the load/s and workplace conditions 2.4 Confirm details of the lifting plan with appropriate personnel 2.5 Inspect and determine the appropriate path for the movement of loads in the work area 2.6 Identify potential workplace hazards 2.7 Adopt control measures consistent with appropriate standards to ensure the safety of personnel and equipment 2.8 Identify appropriate communication methods with appropriate personnel
<b>CE 3 Set Up Crane</b> 3.1 Check ground suitability 3.2 Position crane for work application and stability according to procedures 3.3 Determine appropriate crane configuration for work task according to procedures (where applicable) 3.4 Apply appropriate hazard prevention/control measures to the work area according to procedures 3.5 Test all communications equipment for functionality

**CE 4 Lift and Transfer Load**

- 4.1 Determine that lifts are within the capacity of the crane by using a load chart.
- 4.2 Select rigging equipment
- 4.3 Carry out pre-lift inspection of lifting accessories
- 4.4 Position boom/jib and hoist block over load following directions from appropriate personnel
- 4.5 Carry out test lift according to procedures
- 4.6 Transfer loads using all relevant lorry crane movements according to procedures and the appropriate standard
- 4.7 Interpret all required communication signals correctly according to procedures and the appropriate standard
- 4.8 Monitor load movement to ensure safety to personnel and load, and lorry crane stability
- 4.9 Respond to emergencies in line with procedures

**CE 5 Shut Down and Secure Crane**

- 5.1 Stow and secure loader arm and equipment according to procedures
- 5.2 Stow and secure outriggers/stabilisers according to procedures (where applicable)
- 5.3 Stow and secure plates or packing (where applicable)
- 5.4 Shut down crane according to procedures
- 5.5 Carry out routine post-operational crane checks according to procedures
- 5.6 Record and report all damage and defects according to procedures, and appropriate action is taken

Areas to focus on would include:

- Identifying the principal components of a lorry crane
- Identifying hazards and implement control measures involving lorry crane operations
- Checking of ground condition and proximity hazards
- Conducting pre-lift inspection of lifting accessories on a lorry crane (includes machine inspection, cordon off lifting area).
- Practicing good housekeeping of lifting accessories
- Selecting the appropriate rigging equipment
- Responding to emergencies
- Observing safety procedures when operating a lorry crane
- Setting up outrigger for lifting operation
- Loading / unloading materials onto the lorry crane safely
- Lifting and placing materials using the lorry crane safely
- Shutting down and securing crane safely

The TP is also encouraged to use a range of accidents / emergency scenarios to simulate realism and assess trainee response in these situations.

### 3.4.2 Option Two

The time allocated for the Written Assessment (WA) is ½ hour. Time allocated for Practical Performance (PP) is 1 hour. Time allocated for Oral Questioning is ½ hour. The assessment components (WA, PP and OQ) are compulsory.

#### 3.4.2.1 Written Assessment

Section	Topic	No. of Questions
Section A : MCQ	Rigging and signaling	5
Section B : Questions	Section B : Load chart interpretation	5

#### 3.4.2.2 Practical Performance – As for 3.4.1.2

#### 3.4.2.3 Oral Questioning

This Section will comprise questions covering the other Underpinning Knowledge not covered above and will also serve as an opportunity for the candidates to be “re-assessed” for the questions in Section A and Section B that were answered incorrectly.

**Note:**

**Candidates are allowed to attempt the practical performance only after being assessed as competent (“C”) in the written assessment / oral questioning.**

### 3.4.3 Option Three

Time allocated for Practical Performance (PP) is 1 hour. Time allocated for Oral Questioning is 1 hour. The assessment components (PP and OQ) are compulsory.

#### 3.4.3.1 Practical Performance – As for 3.4.1.3

#### 3.4.3.2 Oral Questions

There will be 30 questions covering all the Underpinning Knowledge not covered via assessing the PCs. Areas of coverage will be as for Option One and Two above.

**Note:**

**Candidates are allowed to attempt the practical performance only after being assessed as competent (“C”) in the oral questioning.**

### 3.5 Briefing to candidate

The briefing to candidate is to explain the purpose and context of assessment so as to ensure that there are no surprises during the conduct of assessment

The briefing to candidate shall include the following:

- the assessment requirements and process, including clear instructions on each of the assessment adopted
- trainees' rights & the appeal process for assessment outcome

During the briefing, assessors are to establish any special needs and how such needs will be addressed during the assessment

Assessor must seek feedback and ascertain candidates' understanding of the assessment requirements before the commencement of the assessment

### 3.6 Recording and reporting of assessment outcome

All assessment outcomes must be accurately recorded in the assessment summary record form

Assessment outcome will be communicated to the candidate at the end of the assessment.

The TP shall maintain a record of the assessment results for 2 years for audit purposes.

### 3.7 Issuance of "Safety Pass" and the "Certificate of Successful Completion"

3.7.1 "Safety Pass/Card" is to be issued, in accordance with the format shown in Annex D, to candidate who is assessed "Competent" in this Competency Unit for the SOC.

3.7.2 "Certificate of Successful Completion" is to be issued, in accordance with the format shown in Annex E, to candidate who is assessed "Competent" in this Competency Unit.

3.7.3 The issuance of the "Certificate of Successful Completion" is optional for TPs who have already issued the "Safety Pass" to candidate who is assessed "Competent" in this Competency Unit.

Note: A trainee who has successfully completed and attained a Statement of Attainment for "Operate Lorry Crane" does not qualify him to perform the duty of a lifting supervisor, rigger or signaller under the Workplace Safety and Health (Operation of Cranes) Regulations 2011. The person is required to successfully complete a training course acceptable to the Commissioner to perform the said duties.

### 3.8 Industry Requirement

- To facilitate uploading of the assessment results, TPs shall install the Automated Marking System (AMS) and its associated hardware.
- The TP personnel who is authorised to use the AMS must also ensure that the assessment results are updated in SSG's TPGateway.
- TPs are to upload the test results to MOM/ WSH Council no later than 5 calendar days after completion of the courses. All errors must be rectified within 24 hours for re-submission of the affected results to MOM/ WSH Council via WSH TRS. This is in addition to the uploading of assessment results to SSG via TPGateway
- MOM/WSH Council officers shall conduct audits with or without notice on WSQ WSHTPs.

## CHAPTER 4: ASSESSMENT ONLY PATHWAY (AOP)

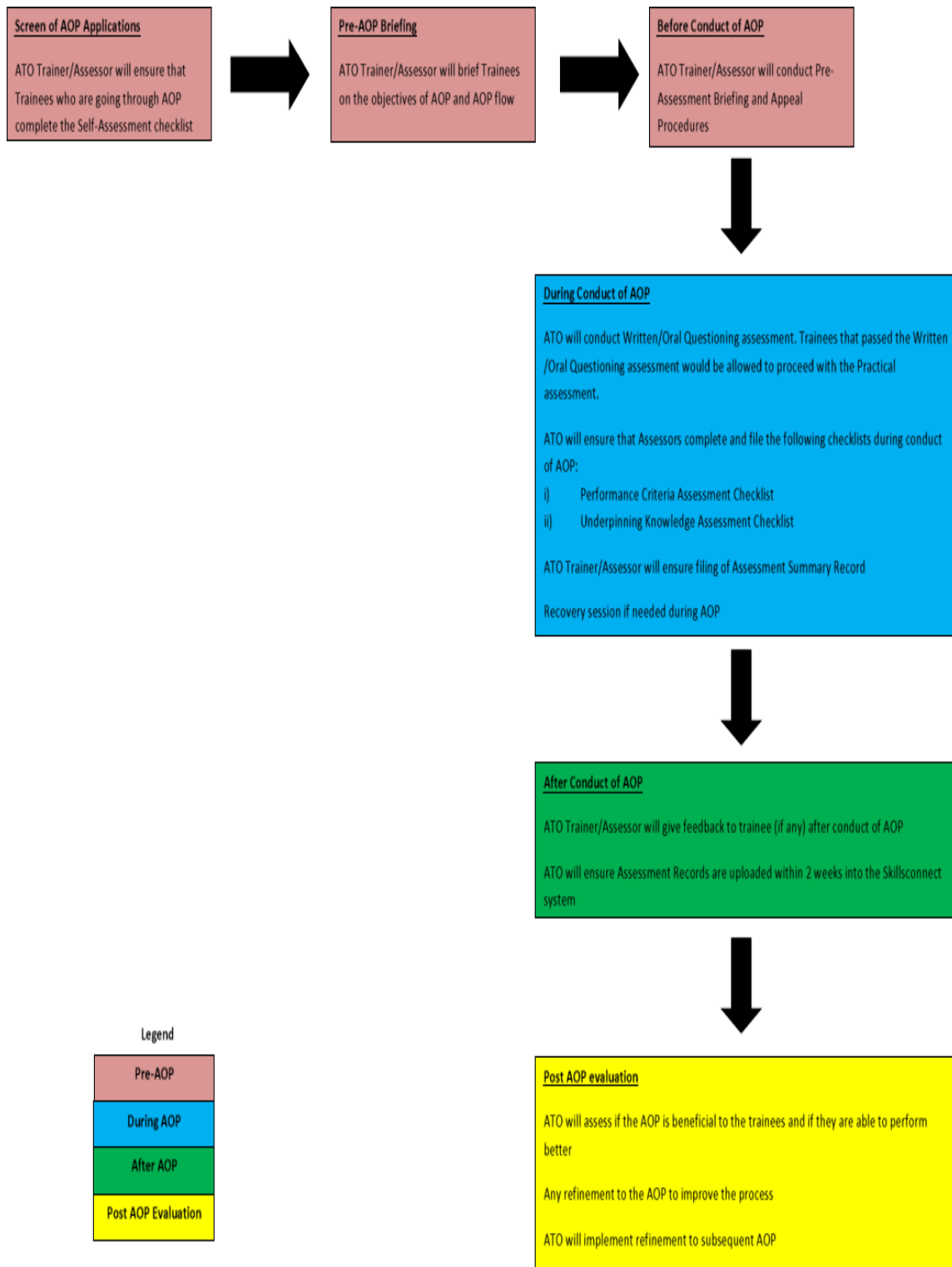
Lorry crane operators with at least 3 years of experience and have undergone certificate training by equipment suppliers or MOM TPs may opt for the assessment only pathway (AOP).

The purpose of the self-evaluation is to enable candidates to check whether they possess the pre-requisites to take the assessment only pathway.

Requirements	Yes	No
I have at least 3 years lorry crane experience	<input type="checkbox"/>	<input type="checkbox"/>
I have attended certificate training by equipment suppliers or MOM ATP	<input type="checkbox"/>	<input type="checkbox"/>
I am supported in my application by my employer	<input type="checkbox"/>	<input type="checkbox"/>
I am familiar with <ul style="list-style-type: none"> <li>• Legislation on lifting operations</li> <li>• Roles and responsibilities of lifting personnel</li> <li>• Fundamentals of lorry crane operations</li> <li>• Rigging and Signaling</li> <li>• Load estimation</li> <li>• Load chart interpretation</li> <li>• Safe work practices</li> <li>• Emergency response to lifting accidents</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>
I am able to: <ul style="list-style-type: none"> <li>• Identify the principal components of a lorry crane</li> <li>• Identify hazards and implement control measures involving lorry crane operations</li> <li>• Check of ground condition and proximity hazards</li> <li>• Conduct pre-lift inspection of lifting accessories on a lorry crane (includes machine inspection, cordon off lifting area).</li> <li>• Practice good housekeeping of lifting accessories</li> <li>• Select the appropriate rigging equipment</li> <li>• Respond to emergencies</li> <li>• Observe safety procedures when operating a lorry crane</li> <li>• Set up outrigger for lifting operation</li> <li>• Load / unload materials onto the lorry crane safely</li> <li>• Lift and place materials using the lorry crane safely</li> <li>• Shut down and secure crane safely</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>



Flow chart below shows the steps to take in the AOP process.



# CHAPTER 5: ADULT EDUCATOR REQUIREMENTS

## 5.1 ADULT EDUCATOR REQUIREMENTS

A developer / trainer / assessor for this module shall possess all of the following:

- WSQ Advanced Certificate in Workplace Safety & Health (WSH) or equivalent
- At least 5 years lorry crane operations experience
- Advanced Certificate in Training and Assessment (ACTA) or Advanced Certificate in Learning and Performance (ACLP) or Diploma in Adult Continuing Education (DACE) or Diploma in Design and Development of Learning for Performance (DDDLP).
- Lifting Supervisor Safety Course Certificate
- Rigger and Signalman Certificates
- All trainers/adult educators are required to attain 10 hours (minimum) annually by attending Continuing Professional and Development (CPD) courses conducted by appointed training providers. For more details, refer to Train-the-Trainer (T3) Programme in WSH Council website ([www.wshc.sg](http://www.wshc.sg))
- The trainer for the course is not permitted to be the assessor for the same course learners during the assessment

**Note: It is possible that development is undertaken by a team. In such a situation, collectively, the team members must possess the requisites set above.**

## CHAPTER 6: RESOURCE INFORMATION

Related WSH legislations, industrial code of practice and other references(list is not exhaustive)

- Workplace Safety and Health Act 2006 and subsidiary legislations
- WSH (General Provisions) Regulations 2006
- WSH (Operation of Cranes) Regulations 2011
- SS 536 : 2008 Code of Practice for the Safe Use of Mobile Cranes
- SS 559 : 2010 Code of Practice for Safe Use of Tower Cranes
- SS 617: Code of Practice for the Lifting of persons in work platforms suspended from cranes
- Code of Practice for Traffic Control at Work Zone, LTA Regulations
- WSH Guidelines (Landscape and Horticulture works)
- Code of Practice on Safe Lifting Operations in the Workplaces (WSH Council)

## **PART II**

### **WSQ & Supporting Resources**

## Glossary

Assessment	A systematic process of collecting evidence and making judgements as to whether an individual has achieved a certain level of competency.
Assessment Criteria and marking scheme	Provides the context and conditions, under which the assessment will be conducted, what evidence the assessor must collect and the grading criteria used.
Assessment method	The process or technique used to gather evidence. (Bresciano & Fackler, 2005)
Assessment plan	A document which outlines when the evaluation will take place and how it will be conducted. An assessment plan includes the “programme mission or course/activity purpose, goals as appropriate, in/ended outcomes, methods for gathering, analysing data, and interpreting data for providing evidence to inform decision making.” (Bresciano & Fackler, 2005)
Assessment process	The series of steps which a candidate undertakes within the enrolment, assessment, recording and reporting cycle of assessment.
Assessment tool	An instrument or resource used in association with a given assessment method. It may include a questionnaire, test paper, interview questions, structured report template and record sheet.
Assumed skills and knowledge	Assumed skills and knowledge are what learners ought to have and are assumed to have before they attend the training programme.
CB	A Certification Body (CB) is an organization accredited by the Singapore Accreditation Council (SAC) to assess and certify a WSH Training Provider’s compliance to ISO 29993:2017 and MOM/WSH Council requirements.
Competency	A competency is a measurable set of knowledge, skills and attitudes that drives and individual’s performance to perform at his/her job effectively.
Competency category	A competency category refers to broad occupational or industry area or function, competency units (CU) that are inter-related are grouped by competency categories.
Competency elements	A competency element is the sub-division of a CU. Competency elements encompasses performance criteria, underpinning knowledge, range and context as well as evidence sources.
Competency level	The competency level reflects the level of complexity and depth of learning required by the competencies in the standard. It is outlined in the competency standards.
Competency Map (CM)	A document that captures the type of competencies needed in an industry. The competencies are expressed as CU and these are grouped into competency categories and pegged to occupational levels.

Competency Standards (CS)	A competency standard documents expected work performance outcomes, expected level of performance, knowledge that supports the delivery of work performance outcomes and work contexts under which the work performance outcomes are to be delivered.
Competency Unit (CU)	A CU describes a particular work role, duty or function, which forms the smallest group of skills, knowledge and abilities set able to be recognized separately for certification. The certification requirements of a CU are detailed in a CS.
Continuing Education and Training (CET)	Continuing Education and Training (CET) refers to educational programmes for adults, usually at the post- secondary level and offered as a part-time or short courses in occupational subject areas. Also see Pre-employment Training (PET).
Credit	A unit of measure assigned to courses or course of equivalent learning.
Technical Notes (TN)	The TN is a document that provides training and assessment advice to achieve effective training and assessment leading to WSQ certification of a CU.
Dimensions of competency	The dimensions of competency cover all aspects of work performance. The five dimensions of competency are: <ul style="list-style-type: none"> <li>- TASK skills</li> <li>- TASK management skills</li> <li>- Contingency management skills</li> <li>- Job and role management skills</li> <li>- Transfer skills</li> </ul>
Evidence sources	The evidence source section in a CS gives examples of tasks, observations, documents etc that can be used as evidence for assessing the particular competency element or list of performance statements.
Learning outcomes	The work performance that a learner should be able to demonstrate as a result of having undertaken training and/or assessment. It must be measurable, clear and observable.
Performance criteria / statements (PC / PS)	Performance criteria or performance statements refer to the expected work performance or behaviours and expected level of performance to be demonstrated by a competent individual.
Pre-employment Training (PET)	Pre-employment Training (PET) refers to educational programmes that prepare individuals for entry into the workforce. This includes secondary, pre-university, polytechnic and university education.
Qualifications	Qualifications are formal certifications issued by a relevant approved body, in recognition that an individual has achieved learning outcomes identified by the industry.
Range and context	Range and context provides the type of situations under which the performance criteria / statements apply. Range and context cover items that are achievable or to be performed across by competent individuals, such as types of equipment, products and services, types of customers.

TP	TPs are training organisations accredited under the WSQ to offer training programmes and assessment services leading to WSQ certification
Underpinning knowledge	Underpinning knowledge states the knowledge that an individual needs to know and understand in order for him/herto perform competently at work.

## Version Control

Version	Amendment Date	Changes	Author	Approved By
1.0	1 Mar 2012	First Release		
2.0	21 Jan 2022	Update	WSH Council	WSH Council
3.0	1 Sep 2022	Update	WSH Council, CPT	WSH Council, CPT



## Annex A

### Instructional Strategy Selection Chart

<b>Instructional Strategy</b>	<b>Cognitive Domain</b> (Bloom, 1956)	<b>Affective Domain</b> (Krathwohl, Bloom, & Masia, 1973)	<b>Psychomotor Domain</b> (Simpson, 1972)
Lecture, reading, audio/visual, demonstration, or guided observations, question and answer period	1. Knowledge	1. Receiving phenomena	1. Perception 2. Set
Discussions, multimedia CBT, Socratic didactic method, reflection. Activities such as surveys, role playing, case studies, fishbowls, etc.	2. Comprehension  3. Application	2. Responding to phenomena	3. Guided response 4. Mechanism
On-the-Job-Training (OJT), practice by doing (some direction or coaching is required), simulated job settings (to include CBT simulations)	4. Analysis	3. Valuing	5. Complex response
Use in real situations. Also maybe trained by using several high level activities coupled with OJT.	5. Synthesis	4. Organize values into priorities	6. Adaptation
Normally developed on own (informal learning) through self-study or learning through mistakes, but mentoring and coaching can speed the process.	6. Evaluation	5. Internalizing values	7. Origination

The chart does not cover all possibilities, but most activities should fit in. For example, self-study could fall under reading, audio visual, and/or activities, depending upon the type of program you design.

(extracted from <http://www.nwlink.com/~donclark/hrd/strategy.html>, accessed 19 Sep 2010)

Annex B

Cross Reference Matrix for WSQ Competency Unit

Applicant:

Competency Unit:

Competency Code:

Legend:  
CU: Competency Unit  
CE: Competency Element  
PC: Performance Criteria

CE – PC	UK & Range & Context	Assessment Criteria (State what is expected and required from the candidate)	Assessment Methods			Assessment Instruments/Tools	Reference		
			Written Questioning	Role Play	Oral Questions		Trainer's Guide	Learner's Guide	Slides

Annex C

ASSESSMENT PLAN

I Overview

Competency unit:  
Competency element:  
Description of candidates:  
Special needs of  
candidates:  
Purpose of assessment:  
Context of assessment:  
Special requirements:  
Assessment venue:  
Assessment methods:

Competency Elements	Methods

Method	Duration	Ratio of assessor to candidate	Remarks
Total			--

### Evidence Gathering Plan

Performance Criteria/	Assessment Method	Assessment Tools
1.1 .....		
1.2 .....		

Underpinning Knowledge	Assessment Method	Question No
<ul style="list-style-type: none"><li>• .....</li><li>• .....</li><li>• .....</li></ul>		

## II Assessment Specifications

<b>SPECIFICATIONS</b>	<b>GUIDELINES</b>
<b>Performance criteria and/or underpinning knowledge covered</b>	
<b>Duration</b>	
<b>Venue</b>	
<b>Set-up</b>	
<b>Pre-assessment instructions</b>	
<b>Process</b>	
<b>Recording Assessment Result:</b>	
<b>Feedback</b>	

### III Assessment Record for

Candidate's  
Name :

End Time :

NRIC  
Number :

Start Time :

Assessor's  
Name :

<b>COMPETENCY ELEMENT 1: .....</b>				
<b>CHECKLIST for ....</b>				
Performance Criteria/Underpinning Knowledge	Assessment Criteria	Tick		Evidence of "C" and "NYC" must be recorded
		C	NYC	
PC 1.1	<ul style="list-style-type: none"> <li>.....</li> <li>.....</li> </ul>			
PC 1.2				

<b>Remarks:</b>

Assessor  
Signature

Date

Candidate  
Signature

Date

#### IV Assessment Summary Record

Competency Unit : Assessment Duration :

<b>APPROVED ASSESSMENT CENTRE:</b>			
<b>Candidate Name (As in NRIC)</b>		<b>NRIC Number</b>	

Competency Element	Assessment Method Indicate C or NYC		Overall Result Indicate C or NYC	Date	Assessor Name	Assessor Signature

Feedback on outcome by Assessor/ Feedback by candidate:  
{Feedback on the overall performance or in the case of NYC; any area of skills gap and improvement needed}

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This candidate has been assessed as

☐

**COMPETENT** in the Unit: .....

☐

**NOT YET COMPETENT** in the Unit: .....

Candidate  
Name (As in  
NRIC)

Candidate  
Signature

Date:

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Assessor  
Name

Assessor  
Signature

Date:

**By signing, the candidate is agreeing to accept the assessment outcome.**



## Annex D

### Format of Safety Pass

“Safety Pass/Card” is to be issued, in accordance with the format shown in Annex D. Safety Pass and/or Certificate of Course Completion is to be issued, to candidate who is assessed “Competent” in this Competency Unit.

#### Guidelines for the credit card size pass for MOM WSH courses by TPs

3  $\frac{3}{8}$  × 2  $\frac{1}{8}$  inch (85.60 × 53.98 mm)

Front view



Font Type: Arial  
Font size (Course title): Recommended 8pt or larger  
Font size (Others): Recommended 6pt or larger  
Photo size: 3.1cm X 2.4cm

- Pass should contain no less than the information depicted in the guide
- TP may use their own reference format for serial number
- Course Title should be the title as indicated in the WSQ Framework (CS/CTAG). The Technical Skills and Competency (TSC) Code and Title, should also be printed in parentheses ( ) aligned to the title reflected in either the Competency Standards (CS) or TSC. However, it is not required to print the TSC Course name if it is the same as the SC/CTAG title
- ID should be FIN, NRIC Passport Number or any unique official identifier
- Course Venue should reflect address of training centre (not business office, etc) which pass holder attended
- Trainer signature should reflect the trainer that conducted the course

## Back view

1. Use of card is governed by terms and conditions of < Name of Training Provider>
2. < Name of Training Providers> is a SkillsFuture Singapore Agency's Training Provider at the date of issuance of the pass
3. This card is not transferrable
4. The course is conducted @.< Course venue>
5. Holder of the card has been certified competent in the <**Course Title**> on the issued date as indicated in front.
6. This card will expire <xx> years from the date of issue.
7. This card is the property of < Name of Training Provider> and must be returned on request.
8. Card shall be retained if it has been tampered with, misused or replaced.
9. This card is issued by < Name of Training Provider>. If found, please return to < Name of Training Provider>. at <Address of < Name of Training Provider>..
10. For enquiries, please contact < Name of Training Provider>. > at <hotline>

Font Type: Arial

Font size : Recommended 6pt or larger

## Annex E

### Certificate of Successful Completion

“Certificate of Successful Completion” is to be issued, in accordance with the format shown in Annex E. This is in addition to the Statement of Attainment (SOA) issued by SSG for WSQ courses.

3 inch 10pt 20pt 10pt 16pt 12pt 10pt 16pt 10pt 12pt 10pt 10pt 1 inch

<Official Logo/Name of TP> Serial Number: <xxx>

**CERTIFICATE OF SUCCESSFUL COMPLETION**

Font type: Arial  
Font size: Recommended as stipulated  
Header/footer space: Recommended as stipulated

is awarded to

**<Name of Trainee>**  
< ID >

for successful completion of the  
<Course Title>  
<TSC Title/Code>

< Name of TP >  
<TP approved by SkillsFuture Singapore>  
@ < Training venue >  
from  
<Training Date/s>

Validity: < x Years from last date of course/ NA>

  
**Genius Man**  
Director / Principal  
Training Division  
<Name of TP> /  
Company Stamp

  
**Smart Man**  
Trainer  
Training Division  
<Name of TP>

<Name of TP> | UEN: <XXX> | <Office Address>  
Tel: <xxx> Fax: <xxx> | Website: <xxx> | Email: <xxx>

- Certificate should contain no less than the information depicted in the guide
- TP may use their own reference format for serial number
- ID should be FIN, NRIC Passport Number or any unique official identifier
- For TP Course, Course Title should be the corresponding title as indicated in WSQ System Framework(CS/CTAG). The Technical Skills and Competency (TSC) Code and Title should be printed in parentheses ( ) aligned to the title reflected in either the Competency Standards (CS) or TSC. However, it is not required to print the TSC course name if it is the same as the CS/CTAG Title
- Course Venue should reflect address of training centre (not business office, etc) which pass holder attended
- Certificate should indicate that <<Name of TP>> is a Training Provider (TP) approved by SkillsFuture Singapore for <<Course Title of corresponding course>>
- Trainer signature should reflect the trainer that conducted the course
- Management of safety certificate should be in accordance to the requirements under TP scheme