

## Qualification Pack



# Design Engineer - Marine Piping and Engineering

QP Code: CSC/Q0407

Version: 2.0

NSQF Level: 7

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## Qualification Pack

### Contents

CSC/Q0407: Design Engineer - Marine Piping and Engineering .....	3
<i>Brief Job Description</i> .....	3
Applicable National Occupational Standards (NOS) .....	3
<i>Compulsory NOS</i> .....	3
<i>Qualification Pack (QP) Parameters</i> .....	3
CSC/N1338: Work effectively in a collaborative environment (SM) .....	5
CSC/N1337: Follow the health and safety practices at shipbuilding work .....	11
SGJ/N1703: Adopt sustainable practices at the workplace .....	21
CSC/N0414: Prepare for designing marine systems for naval ships .....	26
CSC/N0413: Design marine systems .....	31
CSC/N0412: Perform post-designing activities for ships and marine systems .....	37
DGT/VSQ/N0103: Employability Skills (90 Hours) .....	41
Assessment Guidelines and Weightage .....	49
<i>Assessment Guidelines</i> .....	49
<i>Assessment Weightage</i> .....	50
Acronyms .....	51
Glossary .....	52



## Qualification Pack

### CSC/Q0407: Design Engineer - Marine Piping and Engineering

#### Brief Job Description

Design Engineer - Marine piping and engineering is responsible for design of various engineering system(s) of ship which includes, but not limited to, formulation of technical requirements, sizing and selection of major equipment, equipment installation and design of pipe networks to achieve the intended function of the system(s).

#### Personal Attributes

The person should be able to work effectively within a design team environment. The person should have excellent communication and interpersonal skills, strong attention to detail and accuracy, good logical, mathematical and presentation skills. Besides, they require to understand the need to take initiative and manage self and work to improve efficiency and effectiveness.

#### Applicable National Occupational Standards (NOS)

##### Compulsory NOS:

- [1. CSC/N1338: Work effectively in a collaborative environment \(SM\)](#)
- [2. CSC/N1337: Follow the health and safety practices at shipbuilding work](#)
- [3. SGJ/N1703: Adopt sustainable practices at the workplace](#)
- [4. CSC/N0414: Prepare for designing marine systems for naval ships](#)
- [5. CSC/N0413: Design marine systems](#)
- [6. CSC/N0412: Perform post-designing activities for ships and marine systems](#)
- [7. DGT/VSQ/N0103: Employability Skills \(90 Hours\)](#)

#### Qualification Pack (QP) Parameters

<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Ship Building & Repair
<b>Occupation</b>	Design
<b>Country</b>	India



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<b>NSQF Level</b>	7
<b>Credits</b>	26
<b>Aligned to NCO/ISCO/ISIC Code</b>	NCO-2015/2144.0201
<b>Minimum Educational Qualification &amp; Experience</b>	Completed 3 year UG degree (with 3 years of relevant experience OR Completed 4-year UG degree with 2 years of relevant experience OR Completed 2-year PG degree after 3-year UG with 1 year of relevant experience OR Pursuing 2nd year of 2-year PG after 4 year UG program)
<b>Minimum Level of Education for Training in School</b>	Not Applicable
<b>Pre-Requisite License or Training</b>	NA
<b>Minimum Job Entry Age</b>	23 Years
<b>Last Reviewed On</b>	NA
<b>Next Review Date</b>	31/03/2025
<b>NSQC Approval Date</b>	31/03/2022
<b>Version</b>	2.0
<b>Reference code on NQR</b>	QG-07-CG-00196-2023-V1.1-CGSC
<b>NQR Version</b>	1



## Qualification Pack

### CSC/N1338: Work effectively in a collaborative environment (SM)

#### Description

This unit covers basic practices for working effectively with others in a collaborative environment, such as team work and cooperation, awareness of team and organisational goals, sharing of information, communicating effectively using appropriate etiquettes and behaviours, and interpersonal relations.

#### Scope

The scope covers the following :

- Work effectively in a team
- Demonstrate communication etiquette and good behaviour at the workplace
- Respect diversity

#### Elements and Performance Criteria

##### *Work effectively in a team*

To be competent, the user/individual on the job must be able to:

- PC1.** clarify individual, team and organisational goals and responsibilities
- PC2.** take initiative to identify and solve team and work related problems in a positive manner
- PC3.** consult with and assist others to maximise effectiveness and efficiency in carrying out tasks and solving problems
- PC4.** apply initiatives to develop understanding, goodwill and trust with team members
- PC5.** resolve individual disagreements with the concerned person
- PC6.** recognize when a conflict situation exists and try to resolve amicably
- PC7.** follow the organisations policies and procedures to resolve conflicts

##### *Demonstrate communication etiquette and good behaviour at the workplace*

To be competent, the user/individual on the job must be able to:

- PC8.** give feedback of work done and report problems identified in the field
- PC9.** communicate with other people clearly and effectively
- PC10.** use digital and virtual tools for collaboration and communication
- PC11.** use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism
- PC12.** display workplace etiquettes such as using appropriate titles, terms of respect, polite language and avoiding casual expressions
- PC13.** display active listening skills while interacting with others at work
- PC14.** demonstrate responsible and disciplined behavior

##### *Respect diversity*

To be competent, the user/individual on the job must be able to:

- PC15.** manage discussions to keep verbal, non-verbal and written communication gender, disability, age and culturally sensitive and respectful
- PC16.** ensure all group processes follow inclusive practices



## Qualification Pack

- PC17.** transact with all people without any personal bias based on gender, disability, caste, religion, colour, sexual orientation or culture and in accordance with their legal rights
- PC18.** recognize indicators of harassment and discrimination based on gender, disability, caste, religion, colour, sexual orientation or culture at workplace and follow organisational policy for reporting the same.
- PC19.** improve workplace design and accessibility to make it friendly for persons with disabilities (PwD)

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organisation's policies and procedures for working with colleagues and dealing with conflict
- KU2.** individual, team and organisational goals and responsibilities
- KU3.** various categories of people that one is required to communicate and coordinate with in the organisation
- KU4.** importance of effective communication in the workplace
- KU5.** importance of teamwork in organisational and individual success
- KU6.** various components of effective communication
- KU7.** key elements of active listening
- KU8.** value and importance of active listening and assertive communication
- KU9.** barriers to effective communication
- KU10.** importance of tone and pitch in effective communication
- KU11.** importance of avoiding casual expletives and unpleasant terms while communicating professional circles
- KU12.** how poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer
- KU13.** importance of ethics for professional success
- KU14.** importance of discipline for professional success
- KU15.** what constitutes disciplined behavior for a working professional
- KU16.** common reasons for interpersonal conflict
- KU17.** importance of developing effective working relationships for professional success
- KU18.** expressing and addressing grievances appropriately and effectively
- KU19.** common reasons for interpersonal conflict and ways of managing it effectively
- KU20.** benefits of developing productive working relationships with colleagues
- KU21.** importance of disciplined and responsible behaviour
- KU22.** different types of disabilities and the challenges faced by persons with disability (PwD)
- KU23.** laws, acts and provisions defined for PwD by the statutory bodies
- KU24.** government and private schemes and benefits available for PwD
- KU25.** importance of gender sensitivity and equality.
- KU26.** gender, disability and cultural biases, stereotypes and impact on others
- KU27.** gender and its concepts such as gender roles, gender spectrum, gender as an identity



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**KU28.** common inclusive practices and policies following in gender neutral and PwD sensitive organisations

**KU29.** legislations, grievance redressal mechanisms, and penalties against harassment in the workplace

### Generic Skills (GS)

User/individual on the job needs to know how to:

**GS1.** write clear and legible notes, keep records, prepare to-do lists and take down instructions

**GS2.** write basic numbers, quantities and basic work-related terminology for operational requirements in the local language and English

**GS3.** read basic terminologies to accurately interpret labels, supervisor's instructions in the local language and English

**GS4.** read and interpret accurate information from work-related documents and various relevant work instructions and records in local language or English

**GS5.** interact with the concerned personnel appropriately (correct protocol and manner of speaking etc.)

**GS6.** display active listening skills while interacting with co-workers and others in the workplace

**GS7.** deliver consistent and reliable service to internal and external customers

**GS8.** work with co-workers and stakeholders to resolve any issues that threaten work quality as per the planned schedule

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### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Work effectively in a team</i>	<b>11</b>	<b>26</b>	-	-
<b>PC1.</b> clarify individual, team and organisational goals and responsibilities	1	3	-	-
<b>PC2.</b> take initiative to identify and solve team and work related problems in a positive manner	2	5	-	-
<b>PC3.</b> consult with and assist others to maximise effectiveness and efficiency in carrying out tasks and solving problems	1	4	-	-
<b>PC4.</b> apply initiatives to develop understanding, goodwill and trust with team members	2	5	-	-
<b>PC5.</b> resolve individual disagreements with the concerned person	1	4	-	-
<b>PC6.</b> recognize when a conflict situation exists and try to resolve amicably	2	3	-	-
<b>PC7.</b> follow the organisations policies and procedures to resolve conflicts	2	2	-	-
<i>Demonstrate communication etiquette and good behaviour at the workplace</i>	<b>11</b>	<b>26</b>	-	-
<b>PC8.</b> give feedback of work done and report problems identified in the field	2	3	-	-
<b>PC9.</b> communicate with other people clearly and effectively	1	4	-	-
<b>PC10.</b> use digital and virtual tools for collaboration and communication	2	3	-	-
<b>PC11.</b> use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism	2	4	-	-
<b>PC12.</b> display workplace etiquettes such as using appropriate titles, terms of respect, polite language and avoiding casual expressions	2	4	-	-
<b>PC13.</b> display active listening skills while interacting with others at work	1	4	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC14.</b> demonstrate responsible and disciplined behavior	1	4	-	-
<i>Respect diversity</i>	<b>8</b>	<b>18</b>	-	-
<b>PC15.</b> manage discussions to keep verbal, non-verbal and written communication gender, disability, age and culturally sensitive and respectful	2	4	-	-
<b>PC16.</b> ensure all group processes follow inclusive practices	1	3	-	-
<b>PC17.</b> transact with all people without any personal bias based on gender, disability, caste, religion, colour, sexual orientation or culture and in accordance with their legal rights	2	4	-	-
<b>PC18.</b> recognize indicators of harassment and discrimination based on gender, disability, caste, religion, colour, sexual orientation or culture at workplace and follow organisational policy for reporting the same.	2	4	-	-
<b>PC19.</b> improve workplace design and accessibility to make it friendly for persons with disabilities (PwD)	1	3	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	CSC/N1338
<b>NOS Name</b>	Work effectively in a collaborative environment (SM)
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Generic
<b>Occupation</b>	Generic
<b>NSQF Level</b>	7
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	31/03/2022
<b>Next Review Date</b>	31/03/2025
<b>NSQC Clearance Date</b>	31/03/2022



## Qualification Pack

### CSC/N1337: Follow the health and safety practices at shipbuilding work

#### Description

This OS unit is about following the appropriate health and safety practices at work during ship building. It covers responsibilities towards self and others to ensure a safe work environment.

#### Scope

The scope covers the following :

- Maintain personal health and safety
- Assist in hazard management
- Check the first aid box firefighting and safety equipment
- Assist in waste management
- Follow the fire safety guidelines
- Follow the emergency and firstaid procedures
- Carry out relevant documentation and review

#### Elements and Performance Criteria

##### *Maintain personal health and safety*

To be competent, the user/individual on the job must be able to:

- PC1.** follow the recommended practices to ensure protection from infections and transmission to others, such as the use of hand sanitiser and face mask
- PC2.** check the work conditions, assess the potential health and safety risks, and take appropriate measures to mitigate them
- PC3.** select and use the appropriate Personal Protective Equipment (PPE) relevant to the task and work conditions
- PC4.** follow the recommended techniques while lifting and moving heavy objects to avoid injury
- PC5.** follow the manufacturer's instructions and workplace safety guidelines while working on heavy machinery, tools and equipment

##### *Assist in hazard management*

To be competent, the user/individual on the job must be able to:

- PC6.** identify existing and potential hazards at work
- PC7.** assess the potential risks and injuries associated with the identified hazards
- PC8.** coordinate with the supervisor or other relevant personnel to prevent or minimise the identified hazards
- PC9.** handle hazardous materials safely and store them in the designated storage
- PC10.** identify common health hazards and symptoms for self and other crew members related to exposure of confined spaces, radiant energy during welding and cutting, anti fouling and anti - rust additives

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- PC11.** • ensure marine accommodation related safety aspects  
• Marine accommodation related safety aspects: All emergency lights operational, color coded and marked with "E"; escape routes unobstructed; exits clearly marked; safety signs and placards posted and clearly readable; life jackets, immersion suits and EEBDs correctly stowed and marked; internal communications equipment tested and operating correctly; muster list signed and properly displayed at appropriate locations
- PC12.** • ensure machinery spaces related safety aspects  
• Machinery spaces related safety aspects: Escape routes, ladders and emergency exits unobstructed and clearly marked; all handrails, guard-rails and safety guards correctly fitted and secured to protect against fall; spare life-jackets marked and in good order, emergency equipment accessible and operational; all lights operational, stairways and work areas adequately lit, emergency lighting in E/R checked; safety signs and placards posted
- PC13.** • ensure deck area related safety aspects  
• Deck area related safety aspects: Escape routes and embarking areas marked, unobstructed and no slipping and tripping hazards; "Danger-Enclosed Space" marked outside all such spaces having access; other than via manholes; all deck lights operational and in sound enclosures; all safety and hazard zone identification signs posted and readable, fire plan wallets updated; all lifebuoys correctly stowed, life buoy lights and smoke markers valid

### *Check the first aid box, firefighting and safety equipment*

To be competent, the user/individual on the job must be able to:

- PC14.** check the first aid box to ensure it is updated with the relevant first aid supplies
- PC15.** check and test the firefighting and various safety equipment to ensure they are in usable condition
- PC16.** ensure all portable fire extinguishers and stowage locations numbered in place and inspection dated for safety reasons
- PC17.** ensure that the fire station is not locked but only sealed
- PC18.** coordinate with the supervisor for the repair and replacement of firefighting and safety equipment

### *Assist in waste management*

To be competent, the user/individual on the job must be able to:

- PC19.** segregate waste into appropriate categories
- PC20.** recycle the recyclable waste appropriately
- PC21.** dispose of the non-recyclable waste in an environment-friendly manner, complying with the applicable regulations

### *Follow the fire safety guidelines*

To be competent, the user/individual on the job must be able to:

- PC22.** use the appropriate type of fire extinguisher to extinguish different types of fires safely
- PC23.** follow the recommended practices for a safe rescue during a fire emergency
- PC24.** coordinate with the fire department to request assistance to extinguish a serious fire

### *Follow the emergency and first-aid procedures*

To be competent, the user/individual on the job must be able to:

- PC25.** follow the organisational health and safety guidelines during workplace emergencies to ensure own and co-workers' safety
- PC26.** follow the recommended practices to minimise loss to organisational property during an emergency



## Qualification Pack

- PC27.** follow the recommended procedure to free a person from electrocution
- PC28.** administer appropriate first aid to the injured personnel
- PC29.** perform Cardiopulmonary Resuscitation (CPR) on a potential victim of cardiac arrest
- PC30.** coordinate with the emergency services to request medical assistance for seriously injured/ ill personnel requiring professional medical attention or hospitalisation

### *Carry out relevant documentation and review*

To be competent, the user/individual on the job must be able to:

- PC31.** carry out appropriate documentation following a health and safety incident at work, including all the required information
- PC32.** coordinate with the relevant personnel to review health and safety conditions at work regularly or following an incident
- PC33.** assist in implementing appropriate changes to improve the health and safety conditions at work

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** the recommended practices to be followed to ensure protection from infections and transmission to others, such as the use of hand sanitiser and face mask
- KU2.** the importance and process of checking the work conditions, assessing the potential health and safety risks, and take appropriate measures to mitigate them
- KU3.** precautions to be taken to be taken while working in heights like safety nets, length of rope and other safety practices in marine industry
- KU4.** the importance and process of selecting and using the appropriate PPE relevant to the task and work conditions
- KU5.** the recommended techniques to be followed while lifting and moving heavy objects to avoid injury
- KU6.** the importance of following the manufacturer instructions and workplace safety guidelines while working on heavy machinery, tools and equipment
- KU7.** the importance and process of identifying existing and potential hazards at work
- KU8.** the process of assessing the potential risks and injuries associated with the various hazards
- KU9.** how to prevent or minimise different types of hazards
- KU10.** safety aspects related to marine accommodation, machine spaces and deck area
- KU11.** how to handle and store hazardous materials safely
- KU12.** the importance of ensuring the first aid box is updated with the relevant first aid supplies
- KU13.** the process of checking and testing the firefighting and various safety equipment to ensure they are in a usable condition
- KU14.** the criteria for segregating waste into appropriate categories
- KU15.** the appropriate methods for recycling the recyclable waste
- KU16.** the process of disposing of the non-recyclable waste safely and the applicable regulations
- KU17.** use of different types of fire extinguishers to extinguish different types of fires
- KU18.** the recommended practices to be followed for a safe rescue during a fire emergency



## Qualification Pack

- KU19.** how to request assistance from the fire department to extinguish a serious fire
- KU20.** the appropriate practices to be followed during workplace emergencies to ensure safety and minimise loss to organisational property
- KU21.** entry and exit of vessel and evacuation procedures in case of an emergency
- KU22.** methods of prevention of fires like proper and safe disposal of inflammable material, maintenance of proper ventilation in enclosed spaces, temperature control in working areas
- KU23.** common health and safety hazards present in a work environment, associated risks, and how to mitigate them
- KU24.** safe working practices to be followed while working at various hazardous sites and using electrical equipment
- KU25.** ratings of motors and precautions to be taken while dealing with electrical equipment
- KU26.** the importance of ensuring easy access to firefighting and safety equipment
- KU27.** the appropriate preventative and remedial actions to be taken in the case of exposure to toxic materials, such as poisonous chemicals and gases
- KU28.** various causes of fire in different work environments and the recommended precautions to be taken to prevent fire accidents
- KU29.** different methods of extinguishing fire
- KU30.** different materials used for extinguishing fire, such as sand, water, foam, CO<sub>2</sub>, dry powder, etc.
- KU31.** the applicable rescue techniques to be followed during a fire emergency
- KU32.** the importance of placing safety signs and instructions at strategic locations in a workplace and following them
- KU33.** different types of first aid treatment to be provided for different types of injuries
- KU34.** potential injuries associated with incorrect manual handling
- KU35.** how to move an injured person safely
- KU36.** various hazards associated with the use of various machinery, tools, implements, equipment and materials
- KU37.** the importance of ensuring no obstruction and free access to fire exits
- KU38.** how to free a person from electrocution safely
- KU39.** how to administer appropriate first aid to an injured person
- KU40.** how to perform Cardiopulmonary Resuscitation (CPR)
- KU41.** the importance of coordinating with the emergency services to request urgent medical assistance for persons requiring professional medical attention or hospitalisation
- KU42.** the appropriate documentation to be carried out following a health and safety incident at work, and the relevant information to be included
- KU43.** the importance and process of reviewing the health and safety conditions at work regularly or following an incident
- KU44.** the importance and process of implementing appropriate changes to improve the health and safety conditions at work

## Generic Skills (GS)

User/individual on the job needs to know how to:



## Qualification Pack

- GS1.** maintain work-related notes and records
- GS2.** communicate clearly and politely with co-workers and clients
- GS3.** read the relevant literature to get the latest updates about the field of work
- GS4.** listen attentively to understand the information being shared
- GS5.** plan and prioritise tasks to ensure timely completion
- GS6.** take quick decisions to deal with workplace emergencies and accidents
- GS7.** identify possible disruptions to work and take appropriate preventive measures
- GS8.** coordinate with the co-workers to achieve the work objectives
- GS9.** evaluate all possible solutions to a problem to select the best one

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Maintain personal health and safety</i>	<b>4</b>	<b>11</b>	-	-
<b>PC1.</b> follow the recommended practices to ensure protection from infections and transmission to others, such as the use of hand sanitiser and face mask	1	2	-	-
<b>PC2.</b> check the work conditions, assess the potential health and safety risks, and take appropriate measures to mitigate them	1	2	-	-
<b>PC3.</b> select and use the appropriate Personal Protective Equipment (PPE) relevant to the task and work conditions	1	3	-	-
<b>PC4.</b> follow the recommended techniques while lifting and moving heavy objects to avoid injury	0.5	2	-	-
<b>PC5.</b> follow the manufacturer's instructions and workplace safety guidelines while working on heavy machinery, tools and equipment	0.5	2	-	-
<i>Assist in hazard management</i>	<b>13</b>	<b>30</b>	-	-
<b>PC6.</b> identify existing and potential hazards at work	1	3	-	-
<b>PC7.</b> assess the potential risks and injuries associated with the identified hazards	1	3	-	-
<b>PC8.</b> coordinate with the supervisor or other relevant personnel to prevent or minimise the identified hazards	0.5	3	-	-
<b>PC9.</b> handle hazardous materials safely and store them in the designated storage	1	3	-	-
<b>PC10.</b> identify common health hazards and symptoms for self and other crew members related to exposure of confined spaces, radiant energy during welding and cutting, anti fouling and anti - rust additives	0.5	3	-	-

## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<p><b>PC11.</b></p> <ul style="list-style-type: none"> <li>ensure marine accommodation related safety aspects</li> <li>Marine accommodation related safety aspects: All emergency lights operational, color coded and marked with "E"; escape routes unobstructed; exits clearly marked; safety signs and placards posted and clearly readable; life jackets, immersion suits and EEBDs correctly stowed and marked; internal communications equipment tested and operating correctly; muster list signed and properly displayed at appropriate locations</li> </ul>	3	5	-	-
<p><b>PC12.</b></p> <ul style="list-style-type: none"> <li>ensure machinery spaces related safety aspects</li> <li>Machinery spaces related safety aspects: Escape routes, ladders and emergency exits unobstructed and clearly marked; all handrails, guard-rails and safety guards correctly fitted and secured to protect against fall; spare life-jackets marked and in good order, emergency equipment accessible and operational; all lights operational, stairways and work areas adequately lit, emergency lighting in E/R checked; safety signs and placards posted</li> </ul>	3	5	-	-
<p><b>PC13.</b></p> <ul style="list-style-type: none"> <li>ensure deck area related safety aspects</li> <li>Deck area related safety aspects: Escape routes and embarking areas marked, unobstructed and no slipping and tripping hazards; "Danger-Enclosed Space" marked outside all such spaces having access; other than via manholes; all deck lights operational and in sound enclosures; all safety and hazard zone identification signs posted and readable, fire plan wallets updated; all lifebuoys correctly stowed, life buoy lights and smoke markers valid</li> </ul>	3	5	-	-
<p><i>Check the first aid box, firefighting and safety equipment</i></p>	<b>1.5</b>	<b>4</b>	-	-
<p><b>PC14.</b> check the first aid box to ensure it is updated with the relevant first aid supplies</p>	0.5	1	-	-
<p><b>PC15.</b> check and test the firefighting and various safety equipment to ensure they are in usable condition</p>	0.25	1	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC16.</b> ensure all portable fire extinguishers and stowage locations numbered in place and inspection dated for safety reasons	0.25	1	-	-
<b>PC17.</b> ensure that the fire station is not locked but only sealed	0.25	0.5	-	-
<b>PC18.</b> coordinate with the supervisor for the repair and replacement of firefighting and safety equipment	0.25	0.5	-	-
<i>Assist in waste management</i>	<b>1.5</b>	<b>3</b>	-	-
<b>PC19.</b> segregate waste into appropriate categories	0.5	1	-	-
<b>PC20.</b> recycle the recyclable waste appropriately	0.5	1	-	-
<b>PC21.</b> dispose of the non-recyclable waste in an environment-friendly manner, complying with the applicable regulations	0.5	1	-	-
<i>Follow the fire safety guidelines</i>	<b>3.5</b>	<b>8</b>	-	-
<b>PC22.</b> use the appropriate type of fire extinguisher to extinguish different types of fires safely	2	4	-	-
<b>PC23.</b> follow the recommended practices for a safe rescue during a fire emergency	1	2	-	-
<b>PC24.</b> coordinate with the fire department to request assistance to extinguish a serious fire	0.5	2	-	-
<i>Follow the emergency and first-aid procedures</i>	<b>4.5</b>	<b>10</b>	-	-
<b>PC25.</b> follow the organisational health and safety guidelines during workplace emergencies to ensure own and co-workers' safety	1	1	-	-
<b>PC26.</b> follow the recommended practices to minimise loss to organisational property during an emergency	1	1	-	-
<b>PC27.</b> follow the recommended procedure to free a person from electrocution	0.5	2	-	-
<b>PC28.</b> administer appropriate first aid to the injured personnel	1	3	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC29.</b> perform Cardiopulmonary Resuscitation (CPR) on a potential victim of cardiac arrest	0.5	2	-	-
<b>PC30.</b> coordinate with the emergency services to request medical assistance for seriously injured/ ill personnel requiring professional medical attention or hospitalisation	0.5	1	-	-
<i>Carry out relevant documentation and review</i>	<b>2</b>	<b>4</b>	-	-
<b>PC31.</b> carry out appropriate documentation following a health and safety incident at work, including all the required information	1	2	-	-
<b>PC32.</b> coordinate with the relevant personnel to review health and safety conditions at work regularly or following an incident	0.5	1	-	-
<b>PC33.</b> assist in implementing appropriate changes to improve the health and safety conditions at work	0.5	1	-	-
<b>NOS Total</b>	<b>30</b>	<b>70</b>	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	CSC/N1337
<b>NOS Name</b>	Follow the health and safety practices at shipbuilding work
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Generic
<b>Occupation</b>	Generic
<b>NSQF Level</b>	7
<b>Credits</b>	TBD
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	31/03/2022
<b>Next Review Date</b>	31/03/2025
<b>NSQC Clearance Date</b>	31/03/2022



## Qualification Pack

### SGJ/N1703: Adopt sustainable practices at the workplace

#### Description

This unit describes the skills and knowledge required to improve material and energy efficiency in business operations. It describes effective waste management techniques at workplace and suggests ways to make the workplace environmentally sustainable.

#### Scope

The scope covers the following :

- Material and energy audit of workplace
- Material conservation and use of environment friendly materials
- Energy/electricity conservation practices and use of energy efficient systems
- Effective waste management/recycling practices at workplace

#### Elements and Performance Criteria

##### *Material and energy audit of workplace*

To be competent, the user/individual on the job must be able to:

- PC1.** check for compliance with applicable environmental, waste management and disposal regulations
- PC2.** collect information about usage of different materials including water
- PC3.** collect information on the pattern of electricity and fuel consumption
- PC4.** prepare material and energy audit reports

##### *Material conservation and use of environment friendly materials*

To be competent, the user/individual on the job must be able to:

- PC5.** analyze material audit report to decipher excessive consumption of material and water
- PC6.** identify materials which can be replaced by environment friendly substitutes
- PC7.** identify processes where material utilization can be optimized
- PC8.** plan the introduction of revised processes and environment friendly materials in a phased manner
- PC9.** plan and implement ways to conserve and re-use water
- PC10.** monitor material and water conservation processes

##### *Energy/electricity conservation practices*

To be competent, the user/individual on the job must be able to:

- PC11.** analyze energy/electricity audit report to identify high energy/electricity consumption areas
- PC12.** identify processes where energy/electricity utilization can be optimized
- PC13.** identify possibilities of using renewable energy and environment friendly fuels
- PC14.** plan the implementation of energy efficient systems in a phased manner
- PC15.** ensure electrical equipment and appliances are switched off when not in use

##### *Effective waste management/recycling practices*



## Qualification Pack

To be competent, the user/individual on the job must be able to:

- PC16.** identify recyclable, non-recyclable and hazardous waste
- PC17.** ensure recyclable, non-recyclable and hazardous waste are segregated as per SOP
- PC18.** ensure proper mechanism is followed while collecting and disposing recyclable and non-recyclable waste
- PC19.** ensure proper mechanism is followed while collecting and disposing hazardous waste as per SOP
- PC20.** ensure reuse and recycling of waste wherever applicable
- PC21.** ensure proper mechanism is followed for treatment of wastewater in the unit

### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** legislative requirements and organizations procedures for waste management and disposal
- KU2.** organizational procedures for safe handling of equipment and machine operations
- KU3.** reporting protocol and documentation required
- KU4.** parameters and data required for material and energy audit
- KU5.** latest methods of energy and material conservation
- KU6.** environment friendly materials available to replace conventional materials
- KU7.** methods of reducing electrical consumptions
- KU8.** renewable energy sources which can be deployed at the workplace
- KU9.** methods of optimum utilization of waste and best practices for waste disposal
- KU10.** methods of treating wastewater and recycling of water

### Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** record data relevant to waste disposal at workplace
- GS2.** complete statutory documents relevant to safety and hygiene
- GS3.** communicate with team members and colleagues on the significance of greening of jobs
- GS4.** communicate with industries and customers to understand and analyze various strategies, demands, and limitations in the market
- GS5.** make timely decisions for efficient utilization of resources
- GS6.** take decisions with systematic course of actions and/or response
- GS7.** work constructively and collaboratively with others
- GS8.** delegate tasks to improve efficiencies
- GS9.** identify cause and effect of greening of jobs
- GS10.** evaluate information obtained from other departments and stakeholders

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Material and energy audit of workplace</i>	<b>4</b>	<b>8</b>	-	-
<b>PC1.</b> check for compliance with applicable environmental, waste management and disposal regulations	1	2	-	-
<b>PC2.</b> collect information about usage of different materials including water	1	2	-	-
<b>PC3.</b> collect information on the pattern of electricity and fuel consumption	1	2	-	-
<b>PC4.</b> prepare material and energy audit reports	1	2	-	-
<i>Material conservation and use of environment friendly materials</i>	<b>6</b>	<b>12</b>	-	-
<b>PC5.</b> analyze material audit report to decipher excessive consumption of material and water	1	2	-	-
<b>PC6.</b> identify materials which can be replaced by environment friendly substitutes	1	2	-	-
<b>PC7.</b> identify processes where material utilization can be optimized	1	2	-	-
<b>PC8.</b> plan the introduction of revised processes and environment friendly materials in a phased manner	1	2	-	-
<b>PC9.</b> plan and implement ways to conserve and re-use water	1	2	-	-
<b>PC10.</b> monitor material and water conservation processes	1	2	-	-
<i>Energy/electricity conservation practices</i>	<b>5</b>	<b>10</b>	-	-
<b>PC11.</b> analyze energy/electricity audit report to identify high energy/electricity consumption areas	1	2	-	-
<b>PC12.</b> identify processes where energy/electricity utilization can be optimized	1	2	-	-
<b>PC13.</b> identify possibilities of using renewable energy and environment friendly fuels	1	2	-	-

### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC14.</b> plan the implementation of energy efficient systems in a phased manner	1	2	-	-
<b>PC15.</b> ensure electrical equipment and appliances are switched off when not in use	1	2	-	-
<i>Effective waste management/recycling practices</i>	<b>6</b>	<b>12</b>	-	-
<b>PC16.</b> identify recyclable, non-recyclable and hazardous waste	1	2	-	-
<b>PC17.</b> ensure recyclable, non-recyclable and hazardous waste are segregated as per SOP	1	2	-	-
<b>PC18.</b> ensure proper mechanism is followed while collecting and disposing recyclable and non-recyclable waste	1	2	-	-
<b>PC19.</b> ensure proper mechanism is followed while collecting and disposing hazardous waste as per SOP	1	2	-	-
<b>PC20.</b> ensure reuse and recycling of waste wherever applicable	1	2	-	-
<b>PC21.</b> ensure proper mechanism is followed for treatment of wastewater in the unit	1	2	-	-
<b>NOS Total</b>	<b>21</b>	<b>42</b>	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	SGJ/N1703
<b>NOS Name</b>	Adopt sustainable practices at the workplace
<b>Sector</b>	Green Jobs
<b>Sub-Sector</b>	Other Green Jobs
<b>Occupation</b>	Resource Optimization
<b>NSQF Level</b>	5
<b>Credits</b>	1
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	31/03/2022
<b>Next Review Date</b>	31/03/2025
<b>NSQC Clearance Date</b>	31/03/2022



## Qualification Pack

### CSC/N0414: Prepare for designing marine systems for naval ships

#### Description

This unit describes the requirements for planning marine piping and engineering designs

#### Scope

The scope covers the following :

- This unit/task covers the following:
- Gather information
- Prepare the plan
- Organise the resources

#### Elements and Performance Criteria

##### *Gather information*

To be competent, the user/individual on the job must be able to:

- PC1.** • identify the marine systems to be designed, their purpose and performance requirements from the statement of qualitative requirements, which is laid by the customer.
  - types of Marine systems: Propulsion systems, pneumatic and hydraulic systems, habitability and life support systems, rescue and safety systems, ship's gears and devices, weapon engineering systems, etc.
- PC2.** identify design constraints
- PC3.** extract relevant information on the latest technologies, standards and guidance for compliances and improvements in design from authorised sources
- PC4.** identify resources required at various stages of designing

##### *Prepare the plan*

To be competent, the user/individual on the job must be able to:

- PC5.** prepare a design brief with all information required for commencement of designing
- PC6.** prepare a list of specific tasks required for designing requirements across various marine systems design phases
- PC7.** produce work measurement records, progress reports and output PERT charts

##### *Organise the resources*

To be competent, the user/individual on the job must be able to:

- PC8.** prepare the software and drafting workstations for various design activities such as 2D/3D drafting, flow analysis, FE analysis, etc.
- PC9.** organise for the availability of equipment, materials and human resources at various stages of the designing process

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:



## Qualification Pack

- KU1.** legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions
- KU2.** own job role and responsibilities and sources for information pertaining to employment terms, entitlements, job role and responsibilities
- KU3.** relevant people and their responsibilities within the work area
- KU4.** reporting structure, inter-dependent functions, lines and procedures in the work area
- KU5.** company systems for recording design information
- KU6.** international system (SI) of measurement
- KU7.** various types of naval ships and their layout.
- KU8.** various types of marine systems used in Naval ships and their purposes and common performance requirements
- KU9.** naval ships and marine systems designing process
- KU10.** information and level of detail to be included in a design brief of marine systems and their sources
- KU11.** how to extract and use information from engineering drawings and related specifications in relation to work undertaken
- KU12.** how to interpret isometric drawings, imperial and metric systems of measurement, work-piece reference points and system of tolerance
- KU13.** how to measure internal and external dimensions, measuring geometric features
- KU14.** basic naval architecture concepts
- KU15.** authorised sources of information on latest technologies, standards and guidance for compliances and improvements in naval marine systems design
- KU16.** rules and guidelines specified in standards applicable to naval marine systems
- KU17.** project management tools and concepts
- KU18.** importance of identifying design constraints
- KU19.** information and level of detail to be included in a design brief.
- KU20.** a 2D/3D software and drafting workstations applicable to naval marine systems design activities

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** prepare and maintain documentation
- GS2.** read and correctly interpret manuals, health and safety instructions, memos, standards, compliance and company-related documents in English
- GS3.** convey and share technical information clearly using appropriate language
- GS4.** communicate with clients, peers, superiors and subordinates in respectful form and manner in line with organisational protocol
- GS5.** follow organisation rule- based decision-making process
- GS6.** work towards achieving better results for self, others and the organisation
- GS7.** plan and organise work schedule to meet deadlines
- GS8.** organise and analyse information relevant to work



## Qualification Pack

- GS9.** work constructively and collaboratively with others
- GS10.** seek to improve and modify own work practices
- GS11.** apply domain knowledge, observations and data to select a course of action to perform tasks
- GS12.** apply balanced judgements to different situations
- GS13.** use reasoning skills to identify and resolve basic problems

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Gather information</i>	<b>17</b>	<b>26</b>	-	-
<b>PC1.</b> • identify the marine systems to be designed, their purpose and performance requirements from the statement of qualitative requirements, which is laid by the customer. • types of Marine systems: Propulsion systems, pneumatic and hydraulic systems, habitability and life support systems, rescue and safety systems, ship's gears and devices, weapon engineering systems, etc.	5	7	-	-
<b>PC2.</b> identify design constraints	4	7	-	-
<b>PC3.</b> extract relevant information on the latest technologies, standards and guidance for compliances and improvements in design from authorised sources	4	6	-	-
<b>PC4.</b> identify resources required at various stages of designing	4	6	-	-
<i>Prepare the plan</i>	<b>15</b>	<b>22</b>	-	-
<b>PC5.</b> prepare a design brief with all information required for commencement of designing	6	9	-	-
<b>PC6.</b> prepare a list of specific tasks required for designing requirements across various marine systems design phases	4	6	-	-
<b>PC7.</b> produce work measurement records, progress reports and output PERT charts	5	7	-	-
<i>Organise the resources</i>	<b>8</b>	<b>12</b>	-	-
<b>PC8.</b> prepare the software and drafting workstations for various design activities such as 2D/3D drafting, flow analysis, FE analysis, etc.	4	6	-	-
<b>PC9.</b> organise for the availability of equipment, materials and human resources at various stages of the designing process	4	6	-	-
<b>NOS Total</b>	<b>40</b>	<b>60</b>	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	CSC/N0414
<b>NOS Name</b>	Prepare for designing marine systems for naval ships
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Ship Building & Repair
<b>Occupation</b>	Design
<b>NSQF Level</b>	7
<b>Credits</b>	6
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	31/03/2025
<b>NSQC Clearance Date</b>	31/03/2022

## Qualification Pack

### CSC/N0413: Design marine systems

#### Description

This unit deals with design of marine systems such as propulsion systems, pneumatic and hydraulic systems, habitability and life support systems, rescue and safety systems, ship's gears and devices, weapon engineering systems, etc.

#### Scope

The scope covers the following :

- This unit/task covers the following:
- Prepare the preliminary design
- Review the design using 3D Modelling output
- Analyse and modify the system design using software

#### Elements and Performance Criteria

##### *Prepare the preliminary design*

To be competent, the user/individual on the job must be able to:

- PC1.** prepare a concept design
- PC2.** Identify the major equipment required for system operation
- PC3.** review the layout or general arrangement of the platform/vessel for system design
- PC4.** prepare a preliminary schematic diagram of the system, keeping in mind the layout
- PC5.** identify secondary equipment required for the system, its proper functioning and integration
- PC6.**
  - perform calculations to finalise the specifications of the primary and secondary equipment
  - Specifications: capacity, size, materials, etc.
- PC7.** finalise the piping design; diameter, thickness and materials of the pipes and pipe fittings

##### *Review the design using 3D Modelling output*

To be competent, the user/individual on the job must be able to:

- PC8.** provide inputs in the form of updated schematics to the 3D Modelling team
- PC9.** identify changes to be made in the design and equipment specifications based on 3D modelling output

##### *Analyse and modify the system design using software*

To be competent, the user/individual on the job must be able to:

- PC10.** run simulations to check whether results match with the requirement
- PC11.** perform finite element and/or computational fluids dynamics (CFD) and/or flow/kinematic analysis for the systems as required
- PC12.** modify design and equipment specifications based on the results of analysis after taking necessary approvals

#### Knowledge and Understanding (KU)

The individual on the job needs to know and understand:



## Qualification Pack

- KU1.** company systems for recording design information
- KU2.** legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions
- KU3.** marine systems preliminary designing process
- KU4.** design verification and modification process
- KU5.** fundamentals of fluid mechanics and structural dynamics in relation to marine systems design
- KU6.** marine mechanics of materials and theory of vibration
- KU7.** design principles for marine propulsion systems, pneumatic and hydraulic systems, habitability and life support systems, rescue and safety systems, ship's gears and devices, weapon engineering systems, etc.
- KU8.** machinery and equipment used in marine propulsion systems, pneumatic and hydraulic systems, habitability and life support systems, rescue and safety systems, ship's gears and devices, weapon engineering systems, etc.
- KU9.** the key elements and be able to understand the integration of the numerous systems of a naval ship during the design process
- KU10.** computer-aided design (CAD) software to make 2D schematics for marine systems and their operation
- KU11.** purpose, input and output of 3D Modelling
- KU12.** review of 3D Model of marine systems
- KU13.** simulation software used for the analysis of marine systems design
- KU14.** applications of FE analysis for marine systems
- KU15.** applications of CFD flow analysis for marine systems
- KU16.** process of conducting FE and flow analysis using software

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** prepare and maintain documentation
- GS2.** read and correctly interpret manuals, health and safety instructions, memos, standards, compliance and company-related documents in English
- GS3.** convey and share technical information clearly using appropriate language
- GS4.** communicate with clients, peers, superiors and subordinates in respectful form and manner in line with organisational protocol
- GS5.** follow organisation rule- based decision-making process
- GS6.** work towards achieving better results for self, others and the organisation
- GS7.** plan and organise work schedule to meet deadlines
- GS8.** organise and analyse information relevant to work
- GS9.** work constructively and collaboratively with others
- GS10.** seek to improve and modify own work practices
- GS11.** apply domain knowledge, observations and data to select a course of action to perform tasks
- GS12.** apply balanced judgements to different situations



## Qualification Pack

**GS13.** use reasoning skills to identify and resolve basic problems

**GS14.** apply trans-disciplinary thinking at work

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare the preliminary design</i>	<b>22</b>	<b>35</b>	-	-
<b>PC1.</b> prepare a concept design	3	5	-	-
<b>PC2.</b> Identify the major equipment required for system operation	3	5	-	-
<b>PC3.</b> review the layout or general arrangement of the platform/vessel for system design	3	5	-	-
<b>PC4.</b> prepare a preliminary schematic diagram of the system, keeping in mind the layout	3	5	-	-
<b>PC5.</b> identify secondary equipment required for the system, its proper functioning and integration	3	5	-	-
<b>PC6.</b> • perform calculations to finalise the specifications of the primary and secondary equipment • Specifications: capacity, size, materials, etc.	3	5	-	-
<b>PC7.</b> finalise the piping design; diameter, thickness and materials of the pipes and pipe fittings	4	5	-	-
<i>Review the design using 3D Modelling output</i>	<b>6</b>	<b>9</b>	-	-
<b>PC8.</b> provide inputs in the form of updated schematics to the 3D Modelling team	3	4	-	-
<b>PC9.</b> identify changes to be made in the design and equipment specifications based on 3D modelling output	3	5	-	-
<i>Analyse and modify the system design using software</i>	<b>12</b>	<b>16</b>	-	-
<b>PC10.</b> run simulations to check whether results match with the requirement	4	5	-	-
<b>PC11.</b> perform finite element and/or computational fluids dynamics (CFD) and/or flow/kinematic analysis for the systems as required	5	6	-	-



### Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. modify design and equipment specifications based on the results of analysis after taking necessary approvals	3	5	-	-
<b>NOS Total</b>	<b>40</b>	<b>60</b>	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	CSC/N0413
<b>NOS Name</b>	Design marine systems
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Ship Building & Repair
<b>Occupation</b>	Design
<b>NSQF Level</b>	7
<b>Credits</b>	7
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	31/03/2025
<b>NSQC Clearance Date</b>	31/03/2022



## Qualification Pack

# CSC/N0412: Perform post-designing activities for ships and marine systems

## Description

This unit deals in detail with the various activities performed after designing a ship or marine systems.

## Scope

The scope covers the following :

- This unit/task covers the following:
- Perform post-designing activities

## Elements and Performance Criteria

### *Perform post-designing activities*

To be competent, the user/individual on the job must be able to:

- PC1.** correspond with customer and classification society for approval of the designs
- PC2.** produce technical reports and procedures, final schematics, statement of technical requirements, logistics documentation, performance requirements and bill of materials for the production team
- PC3.** interact with vendors to approve machinery
- PC4.** prepare the protocol for pre-dispatch inspection, installation and commissioning trials
- PC5.** review and analyse records of quality team tests, inspections and performance feedback
- PC6.** perform design iterations for further improvement
- PC7.** maintain all design and analysis related records for easy retrieval and reference in future
- PC8.** prepare the operating manuals and checklists required by the users or crew of the ship

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** various post-design activities that a ship and marine design engineer undertakes
- KU2.** information included in technical and logistics documentation related to recommended design and performance requirements
- KU3.** various tests performed by the quality team on a ship that could lead to design modifications
- KU4.** importance of proper maintenance of all design and analysis related records for easy retrieval in future

## Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** prepare and maintain documentation



## Qualification Pack

- GS2.** read and correctly interpret manuals, health and safety instructions, memos, standards, compliance and company-related documents in English
- GS3.** convey and share technical information clearly using appropriate language
- GS4.** communicate with clients, peers, superiors and subordinates in respectful form and manner in line with organisational protocol
- GS5.** follow organisation rule- based decision-making process
- GS6.** work towards achieving better results for self, others and the organisation
- GS7.** plan and organise work schedule to meet deadlines
- GS8.** organise and analyse information relevant to work
- GS9.** work constructively and collaboratively with others
- GS10.** seek to improve and modify own work practices
- GS11.** apply domain knowledge, observations and data to select a course of action to perform tasks
- GS12.** apply balanced judgements to different situations
- GS13.** use reasoning skills to identify and resolve basic problems

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Perform post-designing activities</i>	<b>40</b>	<b>60</b>	-	-
<b>PC1.</b> correspond with customer and classification society for approval of the designs	4	8	-	-
<b>PC2.</b> produce technical reports and procedures, final schematics, statement of technical requirements, logistics documentation, performance requirements and bill of materials for the production team	6	8	-	-
<b>PC3.</b> interact with vendors to approve machinery	4	8	-	-
<b>PC4.</b> prepare the protocol for pre-dispatch inspection, installation and commissioning trials	6	8	-	-
<b>PC5.</b> review and analyse records of quality team tests, inspections and performance feedback	6	8	-	-
<b>PC6.</b> perform design iterations for further improvement	6	8	-	-
<b>PC7.</b> maintain all design and analysis related records for easy retrieval and reference in future	5	8	-	-
<b>PC8.</b> prepare the operating manuals and checklists required by the users or crew of the ship	3	4	-	-
<b>NOS Total</b>	<b>40</b>	<b>60</b>	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	CSC/N0412
<b>NOS Name</b>	Perform post-designing activities for ships and marine systems
<b>Sector</b>	Capital Goods
<b>Sub-Sector</b>	Ship Building & Repair
<b>Occupation</b>	Design
<b>NSQF Level</b>	7
<b>Credits</b>	1
<b>Version</b>	2.0
<b>Last Reviewed Date</b>	NA
<b>Next Review Date</b>	31/03/2025
<b>NSQF Clearance Date</b>	31/03/2022



## Qualification Pack

### DGT/VSQ/N0103: Employability Skills (90 Hours)

#### Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

#### Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Career Development & Goal Setting
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

#### Elements and Performance Criteria

##### *Introduction to Employability Skills*

To be competent, the user/individual on the job must be able to:

- PC1.** understand the significance of employability skills in meeting the current job market requirement and future of work
- PC2.** identify and explore learning and employability relevant portals
- PC3.** research about the different industries, job market trends, latest skills required and the available opportunities

##### *Constitutional values - Citizenship*

To be competent, the user/individual on the job must be able to:

- PC4.** recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.
- PC5.** follow environmentally sustainable practices

##### *Becoming a Professional in the 21st Century*

To be competent, the user/individual on the job must be able to:

- PC6.** recognize the significance of 21st Century Skills for employment



## Qualification Pack

- PC7.** practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life
- PC8.** adopt a continuous learning mindset for personal and professional development

### *Basic English Skills*

To be competent, the user/individual on the job must be able to:

- PC9.** use basic English for everyday conversation in different contexts, in person and over the telephone
- PC10.** read and understand routine information, notes, instructions, mails, letters etc. written in English
- PC11.** write short messages, notes, letters, e-mails etc. in English

### *Career Development & Goal Setting*

To be competent, the user/individual on the job must be able to:

- PC12.** identify career goals based on the skills, interests, knowledge, and personal attributes
- PC13.** prepare a career development plan with short- and long-term goals

### *Communication Skills*

To be competent, the user/individual on the job must be able to:

- PC14.** follow verbal and non-verbal communication etiquette while communicating in professional and public settings
- PC15.** use active listening techniques for effective communication
- PC16.** communicate in writing using appropriate style and format based on formal or informal requirements
- PC17.** work collaboratively with others in a team

### *Diversity & Inclusion*

To be competent, the user/individual on the job must be able to:

- PC18.** communicate and behave appropriately with all genders and PwD
- PC19.** escalate any issues related to sexual harassment at workplace according to POSH Act

### *Financial and Legal Literacy*

To be competent, the user/individual on the job must be able to:

- PC20.** identify and select reliable institutions for various financial products and services such as bank account, debit and credit cards, loans, insurance etc.
- PC21.** carry out offline and online financial transactions, safely and securely, using various methods and check the entries in the passbook
- PC22.** identify common components of salary and compute income, expenses, taxes, investments etc
- PC23.** identify relevant rights and laws and use legal aids to fight against legal exploitation

### *Essential Digital Skills*

To be competent, the user/individual on the job must be able to:

- PC24.** operate digital devices and use their features and applications securely and safely
- PC25.** carry out basic internet operations by connecting to the internet safely and securely, using the mobile data or other available networks through Bluetooth, Wi-Fi, etc.
- PC26.** display responsible online behaviour while using various social media platforms



## Qualification Pack

- PC27.** create a personal email account, send and process received messages as per requirement
- PC28.** carry out basic procedures in documents, spreadsheets and presentations using respective and appropriate applications
- PC29.** utilize virtual collaboration tools to work effectively

### *Entrepreneurship*

To be competent, the user/individual on the job must be able to:

- PC30.** identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research
- PC31.** develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion
- PC32.** identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

### *Customer Service*

To be competent, the user/individual on the job must be able to:

- PC33.** identify different types of customers and ways to communicate with them
- PC34.** identify and respond to customer requests and needs in a professional manner
- PC35.** use appropriate tools to collect customer feedback
- PC36.** follow appropriate hygiene and grooming standards

### *Getting ready for apprenticeship & Jobs*

To be competent, the user/individual on the job must be able to:

- PC37.** create a professional Curriculum vitae (Résumé)
- PC38.** search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively
- PC39.** apply to identified job openings using offline /online methods as per requirement
- PC40.** answer questions politely, with clarity and confidence, during recruitment and selection
- PC41.** identify apprenticeship opportunities and register for it as per guidelines and requirements

## Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** need for employability skills and different learning and employability related portals
- KU2.** various constitutional and personal values
- KU3.** different environmentally sustainable practices and their importance
- KU4.** Twenty first (21st) century skills and their importance
- KU5.** how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up
- KU6.** importance of career development and setting long- and short-term goals
- KU7.** about effective communication
- KU8.** POSH Act
- KU9.** Gender sensitivity and inclusivity
- KU10.** different types of financial institutes, products, and services



## Qualification Pack

- KU11.** components of salary and how to compute income and expenditure
- KU12.** importance of maintaining safety and security in offline and online financial transactions
- KU13.** different legal rights and laws
- KU14.** different types of digital devices and the procedure to operate them safely and securely
- KU15.** how to create and operate an e- mail account
- KU16.** use applications such as word processors, spreadsheets etc.
- KU17.** how to identify business opportunities
- KU18.** types and needs of customers
- KU19.** how to apply for a job and prepare for an interview
- KU20.** apprenticeship scheme and the process of registering on apprenticeship portal

### Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** read and write different types of documents/instructions/correspondence in English and other languages
- GS2.** communicate effectively using appropriate language in formal and informal settings
- GS3.** behave politely and appropriately with all to maintain effective work relationship
- GS4.** how to work in a virtual mode, using various technological platforms
- GS5.** perform calculations efficiently
- GS6.** solve problems effectively
- GS7.** pay attention to details
- GS8.** manage time efficiently
- GS9.** maintain hygiene and sanitization to avoid infection

## Qualification Pack

### Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	<b>1</b>	<b>1</b>	-	-
<b>PC1.</b> understand the significance of employability skills in meeting the current job market requirement and future of work	-	-	-	-
<b>PC2.</b> identify and explore learning and employability relevant portals	-	-	-	-
<b>PC3.</b> research about the different industries, job market trends, latest skills required and the available opportunities	-	-	-	-
<i>Constitutional values - Citizenship</i>	<b>1</b>	<b>1</b>	-	-
<b>PC4.</b> recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
<b>PC5.</b> follow environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	<b>1</b>	<b>3</b>	-	-
<b>PC6.</b> recognize the significance of 21st Century Skills for employment	-	-	-	-
<b>PC7.</b> practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
<b>PC8.</b> adopt a continuous learning mindset for personal and professional development	-	-	-	-
<i>Basic English Skills</i>	<b>3</b>	<b>4</b>	-	-
<b>PC9.</b> use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-

## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC10.</b> read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
<b>PC11.</b> write short messages, notes, letters, e-mails etc. in English	-	-	-	-
<i>Career Development &amp; Goal Setting</i>	<b>1</b>	<b>2</b>	-	-
<b>PC12.</b> identify career goals based on the skills, interests, knowledge, and personal attributes	-	-	-	-
<b>PC13.</b> prepare a career development plan with short- and long-term goals	-	-	-	-
<i>Communication Skills</i>	<b>2</b>	<b>2</b>	-	-
<b>PC14.</b> follow verbal and non-verbal communication etiquette while communicating in professional and public settings	-	-	-	-
<b>PC15.</b> use active listening techniques for effective communication	-	-	-	-
<b>PC16.</b> communicate in writing using appropriate style and format based on formal or informal requirements	-	-	-	-
<b>PC17.</b> work collaboratively with others in a team	-	-	-	-
<i>Diversity &amp; Inclusion</i>	<b>1</b>	<b>1</b>	-	-
<b>PC18.</b> communicate and behave appropriately with all genders and PwD	-	-	-	-
<b>PC19.</b> escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
<i>Financial and Legal Literacy</i>	<b>2</b>	<b>3</b>	-	-
<b>PC20.</b> identify and select reliable institutions for various financial products and services such as bank account, debit and credit cards, loans, insurance etc.	-	-	-	-
<b>PC21.</b> carry out offline and online financial transactions, safely and securely, using various methods and check the entries in the passbook	-	-	-	-

## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC22.</b> identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
<b>PC23.</b> identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
<i>Essential Digital Skills</i>	<b>3</b>	<b>5</b>	-	-
<b>PC24.</b> operate digital devices and use their features and applications securely and safely	-	-	-	-
<b>PC25.</b> carry out basic internet operations by connecting to the internet safely and securely, using the mobile data or other available networks through Bluetooth, Wi-Fi, etc.	-	-	-	-
<b>PC26.</b> display responsible online behaviour while using various social media platforms	-	-	-	-
<b>PC27.</b> create a personal email account, send and process received messages as per requirement	-	-	-	-
<b>PC28.</b> carry out basic procedures in documents, spreadsheets and presentations using respective and appropriate applications	-	-	-	-
<b>PC29.</b> utilize virtual collaboration tools to work effectively	-	-	-	-
<i>Entrepreneurship</i>	<b>2</b>	<b>3</b>	-	-
<b>PC30.</b> identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
<b>PC31.</b> develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
<b>PC32.</b> identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	<b>1</b>	<b>2</b>	-	-
<b>PC33.</b> identify different types of customers and ways to communicate with them	-	-	-	-

## Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC34.</b> identify and respond to customer requests and needs in a professional manner	-	-	-	-
<b>PC35.</b> use appropriate tools to collect customer feedback	-	-	-	-
<b>PC36.</b> follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship &amp; Jobs</i>	<b>2</b>	<b>3</b>	-	-
<b>PC37.</b> create a professional Curriculum vitae (Résumé)	-	-	-	-
<b>PC38.</b> search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
<b>PC39.</b> apply to identified job openings using offline /online methods as per requirement	-	-	-	-
<b>PC40.</b> answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
<b>PC41.</b> identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
<b>NOS Total</b>	<b>20</b>	<b>30</b>	-	-



## Qualification Pack

### National Occupational Standards (NOS) Parameters

<b>NOS Code</b>	DGT/VSQ/N0103
<b>NOS Name</b>	Employability Skills (90 Hours)
<b>Sector</b>	Cross Sectoral
<b>Sub-Sector</b>	Professional Skills
<b>Occupation</b>	Employability
<b>NSQF Level</b>	5
<b>Credits</b>	3
<b>Version</b>	1.0
<b>Last Reviewed Date</b>	29/09/2023
<b>Next Review Date</b>	29/09/2028
<b>NSQC Clearance Date</b>	29/09/2023

## Assessment Guidelines and Assessment Weightage

### Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
5. In case of successfully passing only certain number of NOSs, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack. Qualification Pack Capital Goods Skill Council 47
6. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack



## Qualification Pack

Minimum Aggregate Passing % at QP Level : 70

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

**Minimum Aggregate Passing % at QP Level : 70**

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

## Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
CSC/N1338.Work effectively in a collaborative environment (SM)	30	70	-	-	100	15
CSC/N1337.Follow the health and safety practices at shipbuilding work	30	70	-	-	100	15
SGJ/N1703.Adopt sustainable practices at the workplace	21	42	-	-	63	15
CSC/N0414.Prepare for designing marine systems for naval ships	40	60	-	-	100	15
CSC/N0413.Design marine systems	40	60	-	-	100	15
CSC/N0412.Perform post-designing activities for ships and marine systems	40	60	-	-	100	15
DGT/VSQ/N0103.Employability Skills (90 Hours)	20	30	-	-	50	10
<b>Total</b>	<b>221</b>	<b>392</b>	<b>-</b>	<b>-</b>	<b>613</b>	<b>100</b>



## Qualification Pack

### Acronyms

<b>NOS</b>	National Occupational Standard(s)
<b>NSQF</b>	National Skills Qualifications Framework
<b>QP</b>	Qualifications Pack
<b>TVET</b>	Technical and Vocational Education and Training

## Qualification Pack

### Glossary

<b>Sector</b>	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
<b>Sub-sector</b>	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
<b>Occupation</b>	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
<b>Job role</b>	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
<b>Occupational Standards (OS)</b>	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
<b>Performance Criteria (PC)</b>	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
<b>National Occupational Standards (NOS)</b>	NOS are occupational standards which apply uniquely in the Indian context.
<b>Qualifications Pack (QP)</b>	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
<b>Unit Code</b>	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
<b>Unit Title</b>	Unit title gives a clear overall statement about what the incumbent should be able to do.
<b>Description</b>	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
<b>Scope</b>	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.



## Qualification Pack

<b>Knowledge and Understanding (KU)</b>	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
<b>Organisational Context</b>	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
<b>Technical Knowledge</b>	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
<b>Core Skills/ Generic Skills (GS)</b>	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
<b>Electives</b>	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
<b>Options</b>	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.