



Model Curriculum

Marine Fitter and Rigger

SECTOR: STRATEGIC MANUFACTURING
SUB-SECTOR: SHIP BUILDING & SHIP REPAIR
OCCUPATION: SHIP BUILDING
REF ID: SMC/Q 3401, v1.0
NSQF LEVEL: 4



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

STRATEGIC MANUFACTURING SECTOR SKILL COUNCIL

for the

MODEL CURRICULUM

Complying to National Occupational Standards of

Job Role/Qualification Pack : Marine Fitter and Rigger, QP No. SMC/Q 3401, Version 1.0, NSQF Level 4

Date of Issue: 13th September, 2017

Valid Up to* : 12th September, 2020

*Valid upto to the next review date of the Qualification Pack or the
Valid up to 'date mentioned above (whichever is earlier)

Authorised Signatory

Strategic Manufacturing Sector Skill Council



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Marine Fitter and Rigger

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Marine Fitter and Rigger”, in the “Strategic Manufacturing” Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Lager Insulator		
Qualification Pack Name & Reference ID.	SMC/Q 3401, v1.0		
Version No.	1.0	Version Update Date	13/ 09/2017
Pre-requisites to Training	12 th Standard		
Training Outcomes	After completing this programme, participants will be able to: <ul style="list-style-type: none">• fits components of machinery in fixed positions• fabricate nonstandard parts• assemble sub-components in machines and fastens ship's equipment with ropes, pulleys, winches and cables.		



This course encompasses 4 out of 4 National Occupational Standards (NOS) of “Marine Fitter and Rigger” Qualification Pack issued by “Strategic Manufacturing Sector Skill Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Carry out fitting operations on ship</p> <p>Theory Duration (hh:mm) 35:00</p> <p>Practical Duration (hh:mm) 85:00</p> <p>Corresponding NOS Code SMC/N 3401</p>	<p>The user/individual on the job needs to know/understand/able to do:</p> <ul style="list-style-type: none">• align and position parts on metals using scribe and hand tools like jacks, turnbuckles, clips, wedges, and mauls• locate and mark reference lines such as center and line of center of gravity on all 3 axis• install temporary fasteners to hold parts, in place for welding or riveting• install packing, gaskets, liners, and structural accessories and members, such as doors, hatches, brackets and clips• prepare mould and templates for fabrication of non - standard parts• roll, bend, flange, cut, and shape plates, beams, and other heavy metal parts, using shop machinery, such as plate rolls, presses, bending brakes and joggle machines• assemble coupling, gears, flanges, pulley, clutches, fitting and other similar equipment• install different types of valves on board the vessel, structures and towers• align various types of equipments, pump, gas turbines, weaponry equipments and radars• set shift lines, rubber lines, blanks for installation or machining purposes• make jigs, fixtures, pullers, etc required for use in installation/repairs of mechanical systems and electric motors• install weapon, seating's including minor fabrications as required• install boring/planning on board ship and aligning, levelling with master datum/other reference on board ships• install master Datum on slipway/dry dock align guns and antennae as per	<ol style="list-style-type: none">1. PowerPoint Presentation.2. General Purpose Measuring Instrument.3. External Micrometer.4. Vernier Calliper5. Foot Rule6. Tri-Square7. Combination Sources8. Feeler Guage9. Bore Guage10. Pipe Guage11. Thread Guage12. Pipe Cutting Tools13. Soldering Tools14. Brazing Tools15. Hydraulic Jacks Small16. Thorn Buckles17. Wooden Wedges18. Hammer – Metal & wooden Both19. Hand Grinders20. Spirit Level



Sr. No.	Module	Key Learning Outcomes	Equipment Required
2	<p>Carry out rigging operations on ship</p> <p>Theory Duration (hh:mm) 40:00</p> <p>Practical Duration (hh:mm) 70:00</p> <p>Corresponding NOS Code SMC/N 3402</p>	<p>the blueprint</p> <p>The user/individual on the job needs to know / understand/ able to do :</p> <ul style="list-style-type: none"> • manipulate rigging lines, hoists and pull gear to support materials such as heavy equipment and ships • attach pulleys and blocks to fixed overhead structures such as beams, ceilings, and gin pole booms using bolts and clamps • control movement of heavy equipment through narrow openings in ship deck using chain falls, gin poles and gallows frames • tilt, dip and turn suspended loads to maneuver over/under obstacles using multi-point suspension techniques • install ground rigging for yarding lines • use a fid, a wooden spike to open the threads of fiber ropes in the process of splicing the rope • attach loads to rigging to provide support using hand and power tools • assemble and disassemble sheaves, blocks, shackles and boom • pull and renew all of the working and standing rigging • operate ship's equipment such as mooring winches, ship's cranes, and cargo gear to accomplish specified repairs • tests cargo gear, which includes setting different angles and weight testing of all typesdismantle and store rigging equipment after use 	<ol style="list-style-type: none"> 1. Power point Presentation Of Rigging Operation. 2. Hand Grinder 3. Power Cutting Tools 4. D- Shackles. 5. Wire Rope Sling 6. Trevalla Winch 7. Chain Pulley Blocks 8. Sprit Level 9. General Purpose Measuring Instruments. 10. General Purpose Tools 11. Wire Cables.
3	<p>Work effectively in a collaborative environment in a shipyard</p> <p>Theory Duration (hh:mm) 20:00</p> <p>Practical Duration (hh:mm) 10:00</p> <p>Corresponding NOS Code</p>	<p>The user/individual on the job needs to know/understand/ able to do:</p> <ul style="list-style-type: none"> • define own work and responsibilities • understand individual goals • understand work requirements • collaborate and integrate own work with other people's work • consult with others to achieve smooth workflow • work in a way that shows respect for others • carry out any commitments made to 	<ol style="list-style-type: none"> 1) Training Kit (trainer guide, PPT) 2) Power point for general communication skills, power point for shipyard & factory. 3) Team Management - Posters. 4) Team building - Posters. 5) Team Organisation in



Sr. No.	Module	Key Learning Outcomes	Equipment Required
	SMC/N 9103	<p>others</p> <ul style="list-style-type: none"> • seek ways of improvement of work • Provide proper care to a fellow worker in case of an accident. • receive information and instructions accurately from the supervisor and colleagues • seek clarifications where required without disruption of own or others work • pass on accurate information to authorized persons who require it and within agreed timescale and confirm its receipt • communicate with other people clearly and effectively • use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism • display active listening skills while interacting with others at work and receiving feedback 	Shipyards Posters.
4	<p>Maintain safe, hygiene and secure environment in a shipyard Theory Duration (hh:mm) 20:00 Practical Duration (hh:mm) 16:00</p> <p>Corresponding NOS Code SMC/N 9104</p>	<p>The user/individual on the job needs to know and understand:</p> <ul style="list-style-type: none"> • general rules on hygiene • importance of correct clothing, footwear, safety masks, respiratory masks, gloves, loose cotton and headgear. • the physical signs of hazards and reactions related to exposures to such hazards • entry and exit route of vessel and evacuation procedures in case of an emergency • method to disposing of waste material • work going on in surrounding areas • gasses generated on board of ship • effect of toxic gases in confined spaces • various types of safety signs • requirement of maintaining cleanliness and hygiene • requirement of wearing clean and 	<ol style="list-style-type: none"> 1) Training Kit (Trainer Guide, PPT) 2) Power point presentation of safety general 3) Power point presentation of safety in shipyard / factory 4) Leather apron 5) Safety helmets 6) Safety gloves 7) Industrial safety shoes 8) First aid kit 9) Fire extinguisher (Soda & Foam Type) 10) Fire bucket with sand 11) Protective visor / screen 12) Fire safety - Posters 13) Posters of safety in



Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p>appropriate clothing, footwear and headgear at work place</p> <ul style="list-style-type: none">• correct emergency procedures• importance of keeping a look out for hazards in the workplace related to equipment, Process etc.• use of protective clothing such as gloves, safety glasses, etc for specific tasks & work conditions• reporting method of any accidents quickly and accurately to the proper person	shipyards
	<p>Theory Duration115:00</p> <p>Practical Duration 181:00</p>	Unique Equipment Required: NIL	

Grand Total Course Duration: **296 Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by [Strategic Manufacturing Sector Skill Council](#))



Trainer Prerequisites for Job role: “Marine Fitter and Rigger” mapped to Qualification Pack: “SMC/ Q 3401, v1.0”

Sr. No.	Area	Details
1	Description	Marine Fitter & Rigger fits components of machinery in fixed positions including fabrication of nonstandard parts needed for machine parts assembly. He also sets up ship's equipment with ropes, pulleys, winches and cables. Also responsible for guiding the cargo through narrow spaces or into storage.
2	Personal Attributes	The individual must have responsibility to organize own work within defined limit. He should have basic communication (written and oral), arithmetic skills. Also, understanding the initiative to improve efficiency and effectiveness in work.
3	Minimum Educational Qualifications	12 th Standard
4a	Domain Certification	Certified for Job Role: “ <u>Marine Fitter and Rigger</u> ” mapped to QP: SMC/ Q 3401”. Minimum accepted score is 70%
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “MEP/Q0102”. Minimum accepted score is 80%.
5	Experience	5 years experience in shipyard



Annexure: Assessment Criteria

Assessment Criteria	
Job Role	Marine Fitter and Rigger
Qualification Pack	SMC/Q3401, v1.0
Sector Skill Council	Strategic Manufacturing

Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (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	Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
6	To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
7	In case of <i>unsuccessful completion</i> , the trainee may seek reassessment on the Qualification Pack.



Compulsory NOS Total Marks: 400				Marks Allocation	
Assessment outcomes	Assessment criteria for outcomes	Total Marks	Out of	Theory	Skills/ Practical
SMC/N 3401 Carry out fitting operations	PC1. align and position parts on metal, working from blueprints or templates and using scribe and hand tools like jacks, turnbuckles, clips, wedges, and mauls	100	6	2	4
	PC2. locate and mark reference lines such as center and line of center of gravity on all 3 axis		6	2	4
	PC3. install temporary fasteners to hold parts, in place for welding or riveting		6	2	4
	PC1. install packing, gaskets, liners, and structural accessories and members, such as doors, hatches, brackets, and clips		6	2	4
	PC2. prepare mold and templates for fabrication of nonstandard parts		6	2	4
	PC3. roll, bend, flange, cut, and shape plates, beams, and other heavy metal parts, using shop machinery, such as plate rolls, presses, bending brakes, and joggle machines		6	2	4
	PC4. assemble coupling, gears, flanges, pulleys and other similar nature of associated work		7	2	5
	PC5. install different types of valves on board the vessel, structures, towers etc.		7	2	5
	PC6. align various types of equipment, pump, gas turbines, weaponry equipment, radars etc.		6	2	4
	PC7. set shift lines, rubber lines, deriving of center lines for shafts, blanks for installation or machining purposes.		6	2	4
	PC8. make jigs, fixtures, puller etc. as required for use in installation/repairs		7	2	5



	to mechanical systems, equipment, and electrical motors etc. as the case may be for accomplishing the given task.				
	PC4. install weapon, seating including minor fabrications as required.		8	2	6
	PC5. install boring/planning etc on board ship, aligning, levelling with master datum/other reference on board ships. Machining of seats, such as Gun mounting, Main Engine, Capstan, tool grinding, tool setting. achieving final dimensions as per drawing./specifications.		8	3	5
	PC6. install, grinding of master Datum on slipway/D.Dock alignment of guns, antennas etc. with respect to distant fixed objects (like star)		8	3	5
	PC7. align guns and antennae as per the blueprint		7	2	5
		Total	100	32	68
SMC/N 3402 Carry out rigging operations	PC1. manipulate rigging lines, hoists and pull gear to support materials such as heavy equipment and ships	100	9	3	6
	PC2. attach pulleys and blocks to fixed overhead structures such as beams, ceilings, and gin pole booms, using bolts and clamps		8	2	6
	PC3. control movement of heavy equipment through narrow openings in ship deck or dry dock or confined spaces, using chain falls, gin poles, gallows frames, and other equipment		8	2	6
	PC4. tilt, dip, and turn suspended loads to maneuver over, under, or around obstacles, using multi-point suspension techniques		8	3	5
	PC5. install ground rigging for yarding lines, attaching chokers to logs and to the lines		9	3	6



	PC6. use a fid, wooden spike to open the threads of fibre ropes in the process of splicing the rope		8	3	5
	PC7. attach loads to rigging to provide support or prepare them for moving, using hand and power tools.		8	2	6
	PC8. assemble and disassemble sheaves, blocks, shackles, and boom		9	3	6
	PC9. pull and renew all of the working and standing rigging.		8	3	5
	PC10. operate ship's equipment such as mooring winches, ship's cranes, and cargo gear to accomplish specified repairs		8	2	6
	PC11. tests cargo gear, which includes setting different angles and weight testing of all types		9	3	6
	PC12. dismantle and store rigging equipment after use		8	3	5
	Total		100	32	68
SMC/N 9103 Work effectively in a collaborative environment	PC1. define own work and responsibilities	100	6	2	4
	PC2. understand work requirements and assigned targets		6	2	4
	PC3. collaborate and integrate own work with other people's work		6	2	4
	PC4. consult with others to achieve smooth workflow and help in maximising effectiveness and efficiency in carrying out tasks		6	2	4
	PC5. discuss with the appropriate authority or person, any problems that arise, which may affect the work and remain unresolved		6	2	4
	PC6. work in a way that shows respect for others		5	2	3
	PC7. carry out any commitments made to others		5	2	3



	PC8. seek ways of improvement of work		5	2	3
	PC9. learn skills from others that help in performing the work efficiently and share own skills with them, which may benefit their work		5	2	3
	PC10. work together as a single unit to ensure efficiency in work		5	2	3
	PC11. ensure proper care is given to a fellow worker in case of an accident		5	2	3
	PC12. receive information and instructions accurately from the supervisor and colleagues		5	2	3
	PC13. seek clarifications where required without disruption of own or others work		5	1	4
	PC14. communicate with other people clearly and effectively		5	1	4
	PC15. use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		5	1	4
	PC16. display active listening skills while interacting with others at work and receiving feedback		5	1	4
	PC17. develop understanding, goodwill and trust with team members		5	1	4
	PC18. resolve individual disagreements with the concerned person		5	1	4
	PC19. follow the organisation's policies and procedures to resolve conflicts		5	2	3
		Total	100	32	68
SMC/N 9104 Maintain a healthy, safe and secure working environment	PC1. maintain cleanliness and hygiene	100	7	3	4
	PC2. wear clean clothing		7	3	4
	PC3. follow health procedures		7	3	4
	PC4. identify common health hazards		7	3	4



	PC5. use protective clothing/equipment		6	2	4
	PC6. keep a lookout for accommodation for safety		6	2	4
	PC7. keep a lookout for the Machinery		6	2	4
	PC8. keep a lookout for the Deck		6	2	4
	PC9. report any accidents or near accidents quickly and accurately to the proper person		6	2	4
	PC10. practice emergency procedures		6	2	4
	PC11. use appropriate fire extinguishers on different types of fires correctly causes of fires		6	2	4
	PC12. ensure all portable fire extinguishers & stowage locations numbered, in place & inspection dated and for safety reasons, fire station not locked but only sealed		6	2	4
	PC13. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments		6	2	4
	PC1. participate in emergency procedures and move injured people and others in correct method during an emergency		6	2	4
	PC2. administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.		6	2	4
	PC3. demonstrate basic techniques of bandaging		6	2	4
		Total	100	36	64
	Minimum Pass % To Qualify (Aggregate)	70%			