

## MNTB officer cadet training standards, principles, requirements and approval criteria

March 2017

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**and approval criteria**

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**Introduction**

1. The purpose of this document is to provide the detail for the development and approval of MNTB officer cadet training programmes from autumn 2017.

2. The MNTB introduced the Officer Cadet Foundation Degree Framework in October 2005, followed by the HNC and HND Programme Framework in January 2009. These frameworks effectively replaced the previous National and Scottish Vocational Qualifications and HND-based programmes that had provided for officer cadet training since the 1990s. NB – the FD and HNC/D Framework documents are a useful reference and rationale for development of the original programmes. They provided detail for the development and delivery of MNTB approved programmes to enable Maritime Education and Training (MET) establishments to design their officer cadet programmes and seek MNTB approval for their delivery.

3. The above cadet training frameworks have served the industry well since that time. However, it has become apparent that there is a need to provide for a greater degree of flexibility to MET establishments in the design of officer cadet programmes, in order to:

* provide for the most appropriate education and training experience for cadets;
* meet particular and internal MET establishment requirements
* better meet client company needs; and
* comply with national education and training developments across the UK.

All this whilst maintaining a cohesive, consistent and comprehensive new entrant seafarer education and training system across the UK, ensuring STCW requirements are met and industry needs for qualified, competent officers of the future are provided for.

4. The approach used is modelled on that developed for the new apprenticeship standards in England, which provide a short, easy to understand description of the Knowledge, Skills and Behaviours required to undertake a specific job role.

5. The new officer cadet training standards will:

* assure the MCA that STCW requirements for Officer of the Watch certification are fully taken account of;
* assure shipping companies that overarching industry requirements are appropriately incorporated;
* provide the picture of cadet training programmes to prospective and existing cadets and their parents and teachers.

6. Supporting information stating the principles and requirements for the development of officer cadet programmes by MET establishments, along with the criteria for approval by the MNTB, is also provided to ensure consistency of approach and provision of officer cadet training across the UK.

**Broad Principles for Officer Cadet Programmes**

7. The programmes exist for the benefit of the shipping industry and its seafaring employees and must prepare officer cadets to meet the demands of the industry, along with achieving STCW certification. Marine National Occupational Standards, describing the skills, knowledge and understanding required to achieve competence and covered within STCW, provide the basis for development of the training standards included in this document.

8. MNTB approved programmes are those that provide for the education and training of officer cadets to achieve a minimum of STCW Officer of the Watch certification. They must encompass:

* an educational qualification incorporating the underpinning knowledge, learning and appropriate practice defined within STCW;
* the industry specified knowledge, understanding and behaviours as identified within the training standard;
* specific STCW ‘short courses’ as an integral part of the programme;
* mandatory minimum sea time, effectively integrated through the course such that appropriate stages of learning support practice on board;
* inclusion of the MNTB Training Record Book to attest to relevant coverage of STCW-determined tasks to be carried out on board.

9. Qualifications within the programme must meet the required academic standard and other criteria as laid down by respective awarding organisations/authorities. In order to achieve STCW Certification the officer cadet must complete the approved training programme and satisfy specified MCA examination pass mark requirements.

10. The programme is to consist of phases at the MET establishment and at sea, which progress logically, with the introduction and development of subjects optimised to ensure that learning is progressive. Each phase should thus build on the previous, whilst preparing for the next. For this purpose there must be a minimum of two separate and distinct sea phases interspersed with separate college phases. This effectively defines a minimum five-phase programme, ensuring a *planned, progressive and integrated* education and training experience throughout.

11. Subject to the above, the programme structure and timings will be defined by the MET establishment, provided it meets the requirements of the Training Standard and the content is fully transparent such that programmes provided by different establishments can be compared with each other.

12. Delivery of the MET establishment elements should be in a style that matches the academic ability of those on HNC/HND, FD/SPD, Bachelors and Honours degree courses. The balance between contact time and self learning is to take account of this and should be clearly stated. Self learning should be directed where appropriate.

13. Establishments that provide programmes leading to different qualifications within the same discipline will need to demonstrate the differences in phasing, timings, delivery and assessment methods to make clear the purpose of each programme and the match between the typical entry qualifications and the nature of the programme.

14. Sea time will be underpinned by the MNTB Training Record Book. The programme will need to identify appropriate links between the stage and coverage of academic/ college-based learning, any work-based learning included within the programme and relevant tasks and workbook requirements within the TRB.

**Requirements for Officer Cadet Programmes**

15 The programmes must meet the minimum requirements of the MCA for the award of either STCW ll/1, or STCW III/1 or STCW III/6, i.e. operational level for deck, engineering and electro-technical disciplines, and must incorporate all the requirements within the Training Standard to ensure defined industry needs are provided for. Appendix A provides the Training Standard for each of the disciplines. In addition, Honours, Bachelor, FD/SPD, the ‘full’ HND and the HND ‘top-up’ to the HNC programmes, must provide the underpinning knowledge for the STCW management level certification.

16. *Entry requirements*

16.1 For the FD/SPD programme it is recommended that entry requirements are:

* at least 4 GCSEs (minimum grade 4)/Scottish equivalent, to include Maths, English and a Science based subject; plus
* a minimum of 48 points on the UCAS tariff.

16.2 For the HND programme it is recommended that entry requirements are:

* at least 4 GCSEs (minimum grade 4)/Scottish equivalent, to include Maths, English and a Science based subject; plus
* a level 3 Diploma in Maritime Studies/Nautical Science, or Marine Engineering or an equivalent HE entry course designed to prepare new entrants for study at HN level. NB – where a Level 3 Diploma or equivalent is incorporated as the first phase of the cadet training programme, entry will be as per the above GCSEs

16.3 For the HNC programme it is recommended that entry requirements are:

* at least 4 GCSEs (minimum grade 4)/Scottish equivalent, to include Maths, English and a Science based subject

16.4 For Bachelors and Honours degree programmes, the entry requirements will be set by the specific university admissions requirements.

16.5 FD/SPD (and HND programmes where relevant) must provide articulation to an identified Honours Degree.

16.6 Bachelors and Honours degree programmes must be designed to fully meet the requirements set out in paragraph eight of this document. These programmes may incorporate a specific qualification such as a Foundation degree as the means for achieving OOW certification, which may also provide an exit point from the programme at this stage. This specific qualification component of the course must meet the same principles as set out in the section above. NB - Students leaving degree programmes without achieving the academic award are normally awarded ‘Certificate of Institutional Credit’ or similar title, depending on the institution, which is transferable to another university/college.

16.7 For entrants with existing relevant experience and/or expertise (i.e. specific qualifications/sea service) particular HNC units would provide articulation of the knowledge and understanding against STCW Officer of the Watch certification requirements, along with a particular MCA-specified sea service component.

17. *College/university phases*

17.1 The first phase at college/university must include mandatory STCW safety training, required before any officer cadet goes to sea (as specified in relevant MNTB course criteria documents). Provision should also be made to include other, specified non-mandatory courses, where it is the policy of the MNTB to do so, for example; entry into enclosed space training. It is also considered important to include familiarisation with UK Legal and Administrative Processes (UKLAP) at this stage.

17.2 Suitable inductions must be planned to ensure that the officer cadet understands what is expected in each phase, both at college/university and at sea. This will need to cover the induction requirements set out by the MNTB in the ‘Planned Training at Sea’ shipboard induction booklet, which accompanies this document. This first college/university phase will also need to include provision at college/university for Company Training Officers to brief trainees prior to the first sea phase.

17.3 Subsequent college/university phases must provide for learning at the appropriate level, in a progressive arrangement, such that it supports the development of STCW knowledge, understanding and proficiency and relates to the tasks to be undertaken throughout each sea phase, as defined within the TRB.

17.4 Work-based learning is a vital component of deck FD/SPD programmes, which must meet the minimum credit requirements of the FD for work-based learning at the specific levels of learning, and for the SPD must include at least 25% of the credits for award of the SPD qualification. For engineering and electro-technical programmes a similar requirement will be achieved through a combination of work-based learning and the Engineering Project that is a feature of all engineering programmes at this level. Work based learning may also be incorporated within other programmes as determined by the MET establishment and any specific Awarding Body requirements.

18. *Sea phases*

18.1 Whilst sea phases are the responsibility of the sponsoring/management company, collaboration between company training managers and college/university staff is required to ensure that the programme as a whole is cohesive, with appropriately integrated learning and practical experience throughout.

18.2 Sponsoring/management companies may wish to determine specific sea-phase learning activities and projects in consultation with their chosen MET establishment, as a part of, or additional to, any required work-based learning component.

19. *Other programme aspects*

19.1 Course content must be mapped to relevant STCW tables for each discipline. See Appendix B for the STCW tables.

19.2 Resources available in the college/university must be sufficient and suitable for delivery of the programme.

19.3 Teaching staff must have appropriate experience of the subjects being delivered.

19.4 Officer cadet achievement in academic assessments should conform to the pass marks specified by the MCA, as identified in Appendix C, which also provides detail regarding exemptions against specific MCA examination requirements.

19.5 The programme must allow for an absolute minimum of 12 months sea time, not including leave, or the equivalent of sea time and industrial experience for the engineering and electro-technical disciplines, as required by STCW and the MCA. This should be planned for completion before the final college/university phase. The value of sea time additional to the minimum requirement may also be incorporated within the programme, as may be required/requested by client companies. It should also be noted that the period away from college/university must be utilised efficiently and effectively.

19.6 For deck and engineering programmes, time at sea must include at least 6 months watchkeeping, understudying the Officer of the Watch, as specified by STCW.

19.7. For programmes which have two sea phases, officer cadets are expected to complete all tasks within the respective sea phase as specified in the Training Record Book (TRB). For programmes with more than two sea phases, advice and guidance must be agreed and provided by the college/university and sponsoring company /organisation for task completion within each phase, and this information included within the TRB for each officer cadet as required.

19.8 To ensure the appropriate monitoring of progress and the consistent tutoring of trainees, college/university and company training officers are to adhere to their respective responsibilities, as detailed in Appendix D.

19.9 The programme must provide for appropriate evaluation and assessment to ensure that the trainee is ready to move on to each subsequent phase.

19.10 Rules regarding failures are to be clearly set out by colleges/universities.

19.11 Mandatory short courses are expected to be appropriately incorporated within the programme at suitable times. Wherever possible, specific learning for and/or the short course itself should be incorporated within relevant programme units/modules to ensure cost effectiveness and integration of learning. They must be delivered by MCA approved centres. The list of STCW short courses is provided at Appendix E

19.12 For courses which are not mandatory, but it has been agreed with the MNTB and/or a client company that they will be included in officer training programmes, and where the college/university decides that there should be a separate charge, then this should be made clear to the respective companies at the outset of training.

**MNTB Approval Criteria**

20 Approval of officer cadet training programmes by the MNTB is required in order that SMarT funding can be accessed by recognised cadet training companies and organisations.

21 Colleges / universities seeking MNTB approval for an officer cadet education and training programme are to provide responses to the following:

a. State the name of the qualification offered within the programme and the awarding organisation. Information should be provided about the range and type of officer cadet programmes offered by the college/university and how this programme complements the full suite of officer cadet programmes it is providing in the particular discipline. This should include differentiation by entry, academic, learning and assessment methods, as relevant.

b. Provide detail of how the programme will meet industry needs and the rationale for its specific design (i.e. the number of phases, the qualification included within the programme). This should also include the number of sponsoring organisations that have indicated that they would use the programme and an estimate of the number of officer cadet places that can be provided for in any one intake and the intake periods per year that will be available for the programme.

c. Provide detail of the overall course programme. This should include:

i) The number and duration of each phase

ii) The title and timing of STCW mandatory and MNTB specified non-mandatory courses and other courses

iii) The titles, and timing within each phase of all units/modules and their credit values

iv) Coverage of the practical and technical knowledge and skills as defined with the specific Training Standard, with appropriate mapping to STCW.

d. Illustrate the phases and planned leave on a year planner, including for each expected annual intake (i.e. autumn and/or spring)

e. State the tutor contact time versus self learning time allowed for in each module within the programme. Indicate how self learning will be directed where appropriate, for each module as required.

f. In addition to the requirement to complete the MNTB Training Record Book, state details of any specific directed learning to be undertaken by officer cadets at sea, in particular the WBL component of the FD/SPD programme and any WBL included within other programmes, at each level of learning. Provide details of the training arrangements onboard ship required to facilitate this and for each company intending to place trainees on this programme a statement from them of how this will be achieved.

g. State the entry requirements for admission to the programme.

h. In addition to g), state what other means will be in place to assess the suitability of candidates for the course. If not covered in a), above, where the MET establishment is offering both FD/SPD and HND programmes (i.e. programmes at the same academic level), state how the programme will be differentiated to provide suitable and appropriate learning, assessment and development for those entering onto each programme. NB – this does not apply to the HND ‘top-up’ component to the HNC programme.

i. Provide details of the induction arrangements including the introduction of officer cadets to the programme, to the FEC/HEI environment, to the shipping industry and to life onboard a ship. Include arrangements for the briefing on and distribution of TRBs and WBL requirements, support and assessment, where relevant.

j. Provide details of the resources and facilities available to deliver all aspects of the programme, including the safety courses and practical elements.

k. Provide an outline of the relevant experience of teaching staff.

l. Describe how the overall progress of officer cadets throughout the course, including the sea phases, will be monitored and reported.

m. State how the satisfactory progress and completion the Training Record Book by the officer cadets will be monitored.

n. Describe the evaluation and assessment procedures which will ensure that officer cadets are ready to move on to each subsequent phase.

o. Describe how officer cadets who are not progressing satisfactorily are managed. Regarding failures, set out the arrangements for re-sits and the criteria in place for ‘back phasing’. For those judged unable to complete the course, describe the process in place for recognising achievement of completed elements, or indeed removal from the course.

p. List each mandatory and non-mandatory short course, identify the organisation that will be delivering each course, whether it is integrated within existing programme learning or provided separately and whether specific charges apply.

q. Describe the division of responsibility between college / university and Company Training Officer, including for:

i) Recruitment and selection;

ii) Documentation (i.e. passports, visas, medicals, inoculations, discharge books etc);

iii) Induction;

iv) Conditions of service;

v) Trainee Officer welfare;

vi) Monitoring and ensuring steady development of the officer cadet throughout the course;

vii) Certification.

Where an MOU is used for this purpose a copy will need to be supplied as part of the overall submission documentation. Where there is no MOU in place, describe the means by which the sponsoring company/organisation acknowledges their responsibilities within each part of the programme, as covered by i) to vii) above.

r. State where simulators/simulated training activities are included as part of the course, and have been agreed by the MCA as a proxy for specific sea time, including the sea time period that has been agreed.

22. In seeking approval for the programme, it is recognised by the MNTB that MET establishments have the expertise in programme design and educational content delivery. MET establishments will likewise need to recognise that their programmes must sit within the UK system for seafarer education and training as identified by the MNTB, in conjunction with the MCA.

23. It is recognised that changes may be made to the programme, and an annual re-approval process will be put in place for this purpose. Should it be necessary to make any substantive changes to content, phasing arrangements, staffing arrangements or resource availability outside of the annual re-approval process, the MNTB must be informed in advance, where possible, or at the earliest opportunity following any necessary change, providing full detail and a rationale. Please note that the MNTB may suspend or withdraw approval at any time where it is identified that initial approval, and therefore officer cadet training, has been unduly compromised. Any such decision will only be made by the Programme Approvals Committee, following full discussion and consultation with the MET establishment in question.

**Appendix A**

**Deck Officer Cadet Training Standard**

**Including Certification Requirements Covering STCW II/I for Certification of Officers in Charge of a Navigational Watch on Ships of 500 Gross Tonnage or More**

This deck officer cadet training standard outlines the education and training requirements for development of an officer cadet from entry to achievement of the STCW Officer of the Watch certificate. Depending on the specific route undertaken, it will also provide learning for further certification.

**Role profile** A deck officer cadet will undertake a programme of education and training to become competent in the range of duties required of a deck officer of the watch. This will cover - voyage planning; navigation; watchkeeping; ship handling and manoeuvring; cargo operations and related cargo and vessel aspects; shipboard operations and compliance with legislative requirements; safety and security of all onboard – passengers, crew and related contractors etc; the use of life-saving and safety equipment and systems, and participation in related drills; planning for and dealing with emergency situations; and providing medical first aid.

**Skills**Take personal emergency action and respond to emergencies on board, including providing medical first aid  
Maintain personal health, safety and environmental standards on board  
Maintain safe, legal and effective working practices on board, including when working within enclosed spaces, and participate in safety and security drills as a team member/leader  
Create, maintain and enhance productive working relationships on board  
Take control of survival craft and rescue boats  
Maintain steelwork and deck equipment   
Contribute to vessel stability and watertight integrity  
Take charge of a navigational watch  
Monitor and control vessel operations  
Control vessel mooring, anchoring and securing operations

**Knowledge and understanding**Celestial, terrestrial and coastal navigation and the use of associated nautical charts and publications  
Modern bridge control equipment, its uses and limitations, including ECDIS, radar and automatic radar plotting aids, electronic position fixing and navigation systems, echo sounders, magnetic and gyro compasses

Situational awareness and its importance for effective and efficient operational activities  
Steering control systems and related operational procedures  
Characteristics of weather systems and related reporting procedures and recording systems  
Watchkeeping requirements, including the International Regulations for Prevention of Collisions at Sea  
Bridge resource management  
What constitutes an emergency, how to respond and the actions to take to deal with the range of emergencies on board, including the use of elementary and medical first aid, personal survival techniques, fire prevention and fire fighting, personal safety and social responsibilities, enclosed space working   
International Code of Signals and how to transmit and receive information by visual signalling  
How to manoeuvre and handle a vessel in a range of situations and circumstances and the effects of weather and sea state on it  
Cargo handling, stowage and securing operations  
Ship construction and stability  
International Maritime Conventions concerning the safety of life at sea, security and protection of the marine environment, including pollution prevention requirements  
Leadership and teamworking, including people management, training and related maritime conventions and legislation

Current regulations, their interpretation, practical application and potential impact on ship operations, to include ISM, MLC, Code of Safe Working Practices, MARPOL and ISPS   
How to productively work with multicultural crews, differing cultural characteristics and how they might impact on shipboard operations  
How to provide mentoring and support to colleagues of different ranks on board  
How to assess the performance of the crew and utilise their capabilities effectively during shipboard operations  
Conflict awareness relating to either the crew and/ or passengers and sensible, pragmatic responses to difficult situations  
How to lead teams to carry out a range of safety and security drills and to participate as a team member  
Awareness of fatigue and its impact on individuals and vessel operations  
Bullying and harassment issues and how to identify them and appropriately bring them to the attention of the relevant personnel

NB - cadet training programmes incorporating Honours, Bachelors, FD/SPD or HND qualification will need to include the underpinning knowledge required to obtain the next level of certification.

**Behaviours**

The behaviours expected of a deck officer cadet are:

In emergencies, to follow orders immediately, whilst being prepared to challenge apparent uncertain practice

In normal working conditions, to:

* follow safe working practices
* do what is necessary to manage their own and colleagues’ fatigue
* carry out their duties efficiently to the best of their ability
* comply with company rules and procedures
* work as part of a team to encourage others and engender team spirit
* be considerate towards fellow seafarers, particularly
* those who need to sleep whilst others are awake
* in being punctual when joining their vessel, returning from shore leave, and reporting for watch-keeping and other duties
* in use of shared facilities
* in terms of equality, diversity and respect for other cultures
* take precautions to prevent pollution of the marine environment.

**Experience during training**STCW requires those seeking the OOW Certificate of Competency to have served for a minimum period of 12 months at sea whilst completing a programme of approved training, including the use of an industry-standard training record book. The tasks in which a deck officer cadet is required to have demonstrated proficiency will be documented through the MNTB Training Record Book. Not less than six months sea service shall be supervised bridge watch-keeping duties.

It is expected that, so far as possible, in order to fully carry out the role of a deck officer, the following range of activities and work will have been covered during the cadet training period:

a) working with multicultural crews

b) encountered several differing collision avoidance scenarios including having a detailed understanding of how to manage situations and respond to them safely and effectively

c) working with a range of cargoes and ensuring the safety of the crew and the ship at all times during cargo operations

d) shipboard procedures for keeping the vessel operational and safe, including implementing ISM and SMS correctly.

Where any of the above has not been covered during sea phase periods, the training programme must include suitable learning activities to provide appropriate knowledge and understanding of the issues involved.

**Engineer Officer Cadet Training Standard**

**Including Certification Requirements Covering STCW III/I for Certification of Officers in Charge of an Engineering Watch in a Manned Engine Room or as Designated Duty Engineers in a Periodically Unmanned Engine Room in Ships of 750kW or More**

This engineer officer cadet training standard outlines the education and training requirements for development of an officer cadet from entry to achievement of the STCW Engineering Officer of the Watch certificate. Depending on the specific route undertaken, it will also provide learning for further certification.

**Role profile** An engineer officer cadet will undertake a programme of education and training to become competent in the range of duties required of an engineer officer of the watch. This will cover planning for, preparing and operating marine engineering systems, propulsion machinery, boilers, auxiliary and ancillary systems and service machinery, pumping and associated control systems; operating, adjusting and diagnosing variations and faults, and planning and carrying out maintenance of vessel and marine equipment, systems and machinery; watchkeeping; compliance with legislative requirements; safety and security of shipboard operations, passengers and crew; life-saving and safety equipment and systems; planning for and dealing with emergency situations and participation in related drills; and providing medical first aid.

**Skills**Take personal emergency action and respond to emergencies on board, including providing medical first aid  
Maintain personal health, safety and environmental standards on board  
Maintain safe, legal and effective working practices on board, including when working within enclosed spaces  
Create, maintain and enhance productive working relationships on board  
Take charge of an engineering watch  
Prepare, operate and monitor propulsion machinery and ancillary systems  
Operate auxiliaries and service machinery  
Operate and adjust electrical equipment and electrical propulsion systems  
Maintain electrical and mechanical machinery and systems  
Use hand tools, machine tools and measuring instruments

**Knowledge and understanding**Modern engineering and control equipment and systems, its uses and limitations  
Machinery systems’ construction and operation principles  
Safety and emergency procedures for propulsion plant machinery operations  
Fault finding techniques and procedures for the range of equipment, machinery and systems on board  
Dismantling, adjustment, repair, reassembling and maintenance of machinery and equipment and related safety measures  
Mechanics  
Pumps, piping and control systems  
Electrical, electronic and control equipment configuration and operation principles  
Safety requirements for working on electrical systems, their maintenance and repair requirements  
Construction and operation of electrical testing and measuring equipment  
Electrical and simple electronic diagrams  
Watchkeeping requirements   
Engine room resource management  
Situational awareness and its importance for effective and efficient operational activities  
Ship construction and stability  
What constitutes an emergency, how to respond and the actions to take to deal with the range of emergencies on board, including elementary and medical first aid, personal survival techniques, fire prevention and fire fighting, personal safety and social responsibilities, enclosed space working  
International Maritime Conventions concerning the safety of life at sea, security and protection of the marine environment, including pollution prevention requirements  
Leadership and teamworking, including people management, training and related maritime conventions and legislation  
Current regulations, their interpretation, practical application and potential impact on ship operations, to include ISM, MLC, Code of Safe Working Practices, MARPOL and ISPSHow to productively work with multicultural crews, differing cultural characteristics and how they might impact on shipboard operationsHow to provide mentoring and support to colleagues of different ranks on board  
How to assess the performance of the crew and utilise their capabilities effectively during shipboard operationsConflict awareness relating to either the crew and/ or passengers and sensible, pragmatic responses to difficult situations  
How to lead teams to carry out a range of safety and security drills and how to participate as a team memberAwareness of fatigue and its impact on individuals and vessel operationsbullying and harassment issues and how to identify them and appropriately bring them to the attention of the relevant personnel

NB - cadet training programmes incorporating Honours, Bachelors, FD/SPD or HND qualification will need to incclude the underpinning knowledge required to obtain the next level of certification.

**Behaviours**The behaviours expected of an engineer officer cadet are:

In emergencies, to follow orders immediately, whilst being prepared to challenge apparent uncertain practice

In normal working conditions, to:

* follow safe working practices
* do what is necessary to manage their own and colleagues’ fatigue
* carry out their duties efficiently to the best of their ability
* comply with company rules and procedures
* work as part of a team to encourage others and engender team spirit
* be considerate towards fellow seafarers, particularly
* those who need to sleep whilst others are awake
* in being punctual when joining their vessel, returning from shore leave, and reporting for watch-keeping and other duties
* in use of shared facilities
* in terms of equality, diversity and respect for other cultures
* take precautions to prevent pollution of the marine environment.

**Experience**STCW requires those seeking the EOOW Certificate of Competency to have completed combined workshop skills training/industrial experience and seagoing service for a minimum period of 12 months whilst completing a programme of approved training, including the use of an industry-standard training record book. The tasks in which an engineer officer cadet is required to have demonstrated proficiency will be documented through the MNTB Training Record Book. Not less than six months sea service shall be supervised engine room watch-keeping duties.

It is expected that, so far as it is possible, in order to fully carry out the role of an engineer officer, the following range of activities and work will have been covered during the cadet training period:

a) working with multicultural crews

b) encountered several differing engineering scenarios related to equipment/machinery/ systems breakdown, malfunctions, non-operation, including having an understanding of how to manage situations and respond to them safely and effectively

c) shipboard procedures for keeping the vessel operational and safe, including implementing ISM and SMS correctly.

Where any of the above has not been covered during sea phase periods, the training programme must include suitable learning activities to provide appropriate knowledge and understanding of the issues involved.

**Electro-Technical Officer Cadet Training Standard**

**Including Certification Requirements Covering STCW III/6 for Certification of Electro-Technical Officers in Ships of 750kW or More**

This electro-technical officer cadet training standard outlines the education and training requirements for development of an officer cadet from entry to achievement of the STCW Electro-Technical Officer of the Watch certificate.

**Role profile** An electro-technical officer cadet will undertake a programme of education and training to become competent in a range of duties required of an electro-technical officer. This, calibration will cover operating and maintaining power systems in excess of 1,000 volts; operating, monitoring, maintaining and repairing a range of electrical, electronic and control systems for bridge, shipboard, deck, cargo-handling equipment and machinery and safety systems; compliance with legislative requirements; safety and security of shipboard operations, passengers and crew; life-saving and safety equipment and systems; planning for and dealing with emergency situations and participation in related drills.

**Skills**   
Take personal emergency action and respond to emergencies on board, including providing medical first aid  
Maintain personal health, safety and environmental standards on board  
Maintain safe, legal and effective working practices on board, including when working within enclosed spaces and conducting hot and cold work  
Create, maintain and enhance productive working relationships on board  
Assembling, installing, maintaining, monitoring and repairing on board electrical, electronic, control and communication systems   
Operate generators, distribution systems and power systems, including high voltage systems  
Maintain electrical machinery and systems  
Use hand tools, machine tools, calibration and measuring instruments

**Knowledge and understanding**:Modern electrical, electronic, control, communication and navigation equipment, its uses and limitationsElectrical, electronic and control, communication and navigation systems’ construction and operation principles  
Safety and emergency procedures for electrical, electronic, control, communication and navigation systems operations  
Fault finding techniques and procedures for the range of electrical, electronic and control systems on board  
Safety requirements for working on electrical systems  
Dismantling, adjustment, repair, reassembling and maintenance of electrical, electronic, control, communication and navigation systems   
Construction and operation of electrical testing and measuring equipment  
Electrical and electronic diagramsWhat constitutes an emergency, how to respond and the actions to take to deal with the range of emergencies on board, including elementary and medical first aid, personal survival techniques, fire prevention and fire fighting, personal safety and social responsibilities, enclosed space workingInternational Maritime Conventions concerning the safety of life at sea, security and protection of the marine environment, including pollution prevention requirements  
Leadership and teamworking, including people management, training and related maritime conventions and legislation  
Situational awareness and its importance for effective and efficient operational activities  
Current regulations, their interpretation, practical application and potential impact on ship operations, to include ISM, MLC, Code of Safe Working Practices, MARPOL and ISPSHow to productively work with multicultural crews, differing cultural characteristics and how they might impact on shipboard operationsHow to provide mentoring and support to colleagues of different ranks on board  
How to assess the performance of the crew and utilise their capabilities effectively during shipboard operationsConflict awareness relating to either the crew and/ or passengers and sensible, pragmatic responses to difficult situations  
How to lead teams to carry out a range of safety and security drills and how to participate as a team memberAwareness of fatigue and its impact on individuals and vessel operationsbullying and harassment issues and how to identify them and appropriately bring them to the attention of the relevant personnel

NB - cadet training programmes incorporating Honours, Bachelors, FD/SPD or HND qualification will need to include the underpinning knowledge required to obtain senior electro-technical certification as identified in MSN 1860.

**Behaviours**The behaviours expected of an electro-technical officer cadet are:In emergencies, to follow orders immediately, whilst being prepared to challenge apparent uncertain practice

In normal working conditions, to:

* follow safe working practices
* do what is necessary to manage their own and colleagues’ fatigue
* carry out their duties efficiently to the best of their ability
* comply with company rules and procedures
* work as part of a team to encourage others and engender team spirit
* be considerate towards fellow seafarers, particularly
* those who need to sleep whilst others are awake
* in being punctual when joining their vessel, returning from shore leave, and reporting for watch-keeping and other duties
* in use of shared facilities
* in terms of equality, diversity and respect for other cultures
* take precautions to prevent pollution of the marine environment

**Experience**STCW requires those seeking the Electro-technical Certificate of Competency to have completed combined workshop skills training and seagoing service for a minimum period of 12 months, of which not less than six months shall be sea service, whilst completing a programme of approved training, including the use of an industry-standard training record book. The tasks in which an electro-technical officer cadet is required to have demonstrated proficiency will be documented through the MNTB Training Record Book.

It is expected that, so far as it is possible, in order to fully carry out the role of an Electro-technical Officer, as required by industry, the following range of activities and work will have been covered during the on board training period:

a) working with multicultural crews

b) encountered several differing electro-technical scenarios related to equipment/ machinery/control systems breakdown, malfunction/non-operation, including having an understanding of how to manage situations and respond to them safely and effectively

c) shipboard procedures for keeping the vessel operational and safe, including implementing ISM and SMS correctly.

Where any of the above has not been covered during sea phase periods, the training programme must include suitable learning activities to provide appropriate knowledge and understanding of the issues involved.

**Appendix B**

**STCW Tables**

**Core technical and academic knowledge and skills for STCW deck officer certificates of competency**

|  |  |  |  |
| --- | --- | --- | --- |
| STCW Function | STCW Code Standard of Competence | | Related National Occupational Standard |
| Operational (Table A-II/1) | Management (Table A-II/2) |
| Navigation | Plan and conduct a passage and determine position | Plan a voyage and conduct navigation  Determine position and the accuracy of the resultant fix by any means  Determine and allow for compass errors  Forecast weather and oceanic conditions | B02 Maintain a navigational watch  B03 Plan a navigational voyage |
| Maintain a safe navigational watch | Establish watchkeeping arrangements and procedures | B02 Maintain a navigational watch  B22 Control vessel mooring, anchoring and securing operations |
| Use radar and ARPA to maintain safety of navigation | Maintain safe navigation through use of radar and ARPA and modern navigation systems to assist command decision-making | B02 Maintain a navigational watch  B03 Plan a navigational voyage |
| Respond to emergencies | Respond to navigational emergencies | A13 Control the response to emergencies on board a vessel  B11 Initiate the response to navigation emergencies |
| Respond to a distress signal at sea | Co-ordinate search and rescue operations | B11 Initiate the response to navigation emergencies  B12 Direct the response to navigation emergencies |
| Transmit and receive information by visual signalling |  | Covered in the MCA Signals Examinations |
| Manoeuvre the ship | Manoeuvre and handle a ship in all conditions  Operate remote controls of propulsion plant and engineering systems and services | B02 Maintain a navigational watch  B22 Control vessel mooring, anchoring and securing operations  B03 Plan a navigational voyage  B04 Control navigation and vessel handling |
| Cargo handling and stowage | Monitor the loading, stowage, securing and unloading of cargoes and their care during the voyage | Plan and ensure safe loading, stowage, securing, care during the voyage and unloading of cargoes  Carriage of dangerous cargoes | B14 Monitor and control vessel operations  B15 Plan and direct vessel operations |
| Controlling the operation of the ship and care for persons on board | Maintain seaworthiness of the ship | Control trim, stability and stress | A22 Plan and organise the maintenance of the vessel’s structure, fittings and equipment  A02 Ensure the stability and watertight integrity of a vessel  A01 Contribute to the stability and watertight integrity of a vessel  B14 Monitor and control vessel operations |
| Monitor compliance with legislative requirements  Ensure compliance with pollution prevention requirements | Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and protection of the marine environment | A32 Maintain safe, legal and effective working practices on board a vessel  A33 Ensure safe, legal and effective working practices on board a vessel  A34 Create, maintain and enhance productive working relationships on board a vessel  B15 Plan and direct vessel operations |
| Prevent, control and fight fires on board | Maintain safety and security of the ship’s crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems | A12 Respond to emergencies on board a vessel  A13 Control the response to emergencies on board a vessel |
| Operate life-saving appliances | Develop emergency and damage control plans and handle emergency situations | A12 Respond to emergencies on board a vessel  A13 Control the response to emergencies on board a vessel  A15 Take control of survival craft and rescue boats |

|  |  |  |  |
| --- | --- | --- | --- |
| STCW Function | STCW Standard | | Related National Occupational Standard |
| Operational (Table A-II/1) | Management (Table A-II/2) |
| Controlling the operation of the ship and care for persons on board *(continued)* | Apply medical first aid on board ship | Organise and manage the provision of medical care on board | A12 Respond to emergencies on board a vessel  A16 Provide medical services on board a vessel |
| - | Organise and manage the crew | Management occupational standards |

**Core technical and academic knowledge and skills for STCW engineer officer certificates of competency**

The following competencies are specified at the operational level only (Table A-III/1) for the function ‘Marine Engineering’:

* Use appropriate tools for fabrication and repair operations typically performed on ships
* Use hand tools and measuring equipment for dismantling, maintenance, repair and re-assembly of shipboard plant and equipment
* Use hand tools, electrical and electronic measuring and test equipment for fault finding, maintenance and repair operations

The following competencies are specified at operational and management levels according to function:

|  |  |  |  |
| --- | --- | --- | --- |
| STCW Function | STCW Code Standard of Competence | | Related National Occupational Standard |
| Operational (Table A-III/1) | Management (Table A-III/2) |
| Marine engineering | Maintain a safe engineering watch | Plan and schedule operations | C51 Plan and schedule vessel engineering operation  C03 Take charge of an engine room watch |
| Operate main and auxiliary machinery and associated control systems | Start up and shut down main propulsion and auxiliary machinery, including associated systems  Operate, monitor and evaluate engine performance and capacity  Maintain safety of engine equipment, systems and services | C11 Prepare and operate vessel propulsion machinery and ancillary systems  C21Manage the operation of vessel propulsion machinery and ancillary systems  C12 Operate vessel auxiliaries and service machinery  C22 Manage the operation of vessel auxiliaries, auxiliary boilers and service machinery |

|  |  |  |  |
| --- | --- | --- | --- |
| STCW Function | STCW Standard | | Related National Occupational Standard |
| Operational (Table A-III/1) | Management (Table A-III/2) |
| Marine Engineering *(continued)* | Operate pumping systems and associated control systems | Manage fuel and ballast operations | C12 Operate vessel auxiliaries and service machinery  C22 Manage the operation of vessel auxiliaries, auxiliary boilers and service machinery |
| Use English in written and oral form | Use internal communication systems | Covered by all units as appropriate |
| Electrical, electronic and control engineering | Operate alternators, generators and control systems | Operate electrical and electronic control equipment  Test, detect faults and maintain and restore electrical and electronic control equipment to operating condition | C13 Operate and adjust vessel electrical equipment  C23 Manage the operation of vessel electrical, electronic and control systems  C43 Diagnose the causes of variations in vessel electrical and electronic systems  C44 Diagnose the causes of variations in vessel instrumentation and control systems  C33 Carry out maintenance of vessel electrical machinery and systems  C36 Carry out maintenance of vessel instrumentation and control systems |
| Maintenance and repair | Maintain marine engineering systems, including control systems | Organise safe maintenance and repair procedures  Detect and identify the cause of machinery malfunctions and correct faults  Ensure safe working practices | C34 Carry out maintenance of vessel mechanical machinery and systems  C53 Plan maintenance for vessel engineering systems  C42 Diagnose the causes of variations in vessel mechanical systems  C43 Diagnose the causes of variations in vessel electrical and electronic systems  C44 Diagnose the causes of variations in vessel instrumentation and control systems  A33 Ensure safe, legal and effective working practices on board a vessel |

|  |  |  |  |
| --- | --- | --- | --- |
| STCW Function | STCW Standard | | Related National Occupational Standard |
| Operational (Table A-II/1) | Management (Table A-II/2) |
| Controlling the operation of the ship and care for persons on board | Maintain seaworthiness of the ship | Control trim, stability and stress | A02 Ensure the stability and watertight integrity of a vessel  A01 Contribute to the stability and watertight integrity of a vessel |
| Ensure compliance with pollution prevention requirements  Monitor compliance with legislative requirements | Monitor and control compliance with legislative requirements and measures to ensure safety of life at sea and protection of the marine environment | C55 Prepare vessel response plans for engineering contingency situations  A32 Maintain safe, legal and effective working practices on board a vessel  A33 Ensure safe, legal and effective working practices on board a vessel  A34 Create, maintain and enhance productive working relationships on board a vessel |
| Prevent, control and fight fires on board | Maintain safety and security of the ship’s crew and passengers and the operational condition of life-saving, fire-fighting and other safety systems | A12 Respond to emergencies on board a vessel  A13 Control the response to emergencies on board a vessel |
| Operate life-saving appliances | Develop emergency and damage control plans and handle emergency situations | A12 Respond to emergencies on board a vessel  A13 Control the response to emergencies on board a vessel  A15 Take control of survival craft and rescue boats |
| Apply medical first aid on board ship | - | A12 Respond to emergencies on board a vessel |
|  | Organise and manage the crew | C52 Direct vessel engineering operations  Management occupational standards |

**Core technical and academic knowledge and skills for STCW electro-technical officer certificates of competency**

The following competencies are specified at operational levels according to function:

|  |  |  |  |
| --- | --- | --- | --- |
| STCW Function | STCW Code Standard of Competence | | Related National Occupational Standard |
| Operational (Table A-III/6) |  |
| Electrical, electronic and control engineering | Monitor the operation of electrical, electronic and control systems |  | C23 Manage the operation of vessel electrical, electronic and control systems  C13 Operate and Adjust Vessel Electrical Equipment |
| Monitor the operation of automatic control systems of propulsion and auxiliary machinery |  | C21 Manage the operation of vessel propulsion machinery and ancillary systems  C14 Operate and adjust vessel electrical propulsion  C23 Manage the operation of vessel electrical, electronic and control systems |
| Operate generators and distribution systems |  | C01 Monitor and operate engine room machinery |
| Operate and maintain power systems in excess of 1,000 volts |  | C17 Operate and maintain high voltage equipment on board a vessel  C24 Manage the safety of vessel high voltage electrical systems |
| Operate computers and computer networks on ships |  | C16 Operate and maintain vessel internal communication and hardware systems |
| Use English in written and oral form |  | Covered by all units as appropriate |
| Use internal communication systems |  | Covered by all units as appropriate |
| Maintenance and repair at the operational level | Maintenance and repair of electrical and electronic equipment |  | C23 Manage the operation of vessel electrical, electronic and control systems  C15 Operate and maintain equipment in hazardous areas on board a vessel  C32 Contribute to maintenance of vessel electrical equipment  C33 Carry out maintenance of vessel electrical machinery and systems |

|  |  |  |  |
| --- | --- | --- | --- |
| STCW Function | STCW Code Standard of Competence | | Related National Occupational Standard |
| Operational (Table A-III/6) |  |
|  | Maintenance and repair of automation and control systems of main propulsion and auxiliary machinery |  | C36 Carry out maintenance of vessel instrumentation and control systems |
| Maintenance and repair of bridge navigation equipment and ship communication systems |  | C35 Carry out maintenance of vessel telecommunication and navigation systems |
| Maintenance and repair of electrical, electronic and control systems of deck machinery and cargo-handling equipment |  | C37 Manage maintenance of vessel instrumentation and control systems  C15 Operate and maintain equipment in hazardous areas on board a vessel |
| Maintenance and repair of control and safety systems of hotel equipment |  | C37 Manage maintenance of vessel instrumentation and control systems |
| Controlling the operation of the ship and care for persons on board at the operational level | Ensure compliance with pollution-prevention requirements |  | A32 Maintain safe, legal and effective working practices on board a vessel  A33 Ensure safe, legal and effective working practices on board a vessel  A34 Create, maintain and enhance productive working relationships on board a vessel |
| Prevent, control and fight fire on board |  | A12 Respond to emergencies on board a vessel  A13 Control the response to emergencies on board a vessel |
| Operate life-saving appliances |  | A12 Respond to emergencies on board a vessel  A13 Control the response to emergencies on board a vessel  A15 Take control of survival craft and rescue boats |
| Apply medical first aid on board ship |  | A12 Respond to emergencies on board a vessel |
| Application of leadership and teamworking skills |  | Management occupational standards |
| Contribute to the safety of personnel and ship |  | A33 Ensure safe, legal and effective working practices on board a vessel |

**Appendix C**

**MCA examination pass-mark and exemptions against specific MCA examination requirements**

*Deck*

Deck officer trainees who are successful in MNTB approved training programmes and meet standards set by the MCA for assessment of STCW-related content need only to pass the appropriate SQA/MCA Safety Examinations at each level to complete the written requirements for MCA certification. The details are as follows

* HNC/D together with SQA/MCA Examinations in Navigation and Stability & Operations meet the written requirements for OOW certification deck officer certificates;
* HND together with SQA/MCA Examinations in Navigation and Stability & Structure meet the written requirements for Chief Mate and Master certification.
* FD/SPD together with SQA/MCA Examinations in Navigation and Stability & Operations meet the written requirements for OOW certification deck officer certificates and with SQA/MCA Examinations in Navigation and Stability & Structure meet the written requirements for Chief Mate and Master certification

The Oral examination must be passed at each level and the relevant short course requirements must be met.

The pass marks for modules within the above programmes required to qualify trainees for the issue of MCA certification are 65% for navigation modules and 60% for stability

*Engineer*

Engineer officer trainees who are successful in MNTB approved training programmes and meet standards set by the MCA for assessment of STCW-related content need only to pass the appropriate IAMI Engineering Knowledge examinations at each level to complete the written requirements for MCA certification.  The details are as follows:

* HNC/D provides exemption from the academic subjects for Officer of the Watch certification;
* HND provides exemption from the academic subjects for Second and Chief Engineer certification;
* FD/SPD provides exemption from the academic subjects at Officer of the Watch, Second and Chief Engineer certification.

The EK and Oral examination must be passed at each level and the relevant short course and workshop skills requirements must be met.

**Appendix D**

**Main roles and responsibilities of those involved in officer cadet training programmes**

|  |  |
| --- | --- |
| **Partner** | **Roles and responsibilities** |
| Provider (FEC/HEI) | Programme design, validation, delivery and assessment, in accordance with Awarding/Accreditation Body documentation and in conjunction with employers.  Quality Assurance (in accordance with FEC/HEI procedures).  Student-centred Personal Development Planning and Individual Action Plans.  Standards for admission to the programme.  Liaison with shipping companies/management organisations on aspects of course design, delivery, organisation, management – including of officer cadets as required.  Marketing (depending on partnership arrangement for company-sponsored trainees).  Recruitment/selection of un-sponsored students.  Securing MCA and MNTB approval (in accordance with training standards).  STCW short courses and engineering workshop skills. |
| Shipping company/ Management organisation | Marketing, recruitment and selection (depending on partnership arrangement in respect of company-sponsored officer cadets).  Liaison with provider on aspects of programme design, delivery, organisation, management.  Officer cadet management, supervision, guidance and mentoring.  Provision and supervision/monitoring of practical training aboard ship, overseeing completion of TRB tasks to meet MCA requirements.  Release sponsored officer cadets for university/college-based phases and STCW short courses and engineering workshop skills. |
| MCA | Monitoring of provision, to ensure compliance with STCW.  Criteria for award of CoC examinations and joint approval of MNTB programmes.  Check compliance with arrangements for planned training at sea (i.e. satisfactory completion of TRB). |
| Professional bodies | Accredit programme at appropriate professional level. Advise on progression to higher levels of professional recognition. |
| MNTB | Forum for key stakeholders - employers, unions, FECs/HEIs, MCA. Co-ordination of partners - unity not uniformity.  'Ownership' of overall training standards for officer cadets and for programme approval. Maintain Occupational Standards.  Recommend standards for entry to the industry (other than medical). Provide common 'tools' (e.g. Training Record Book).  Careers promotion and information. |
| Learners | Responsibility for own learning and development. Student-centred Personal Development Planning and Individual Action Planning. |

**Appendix E**

**List of STCW short courses**

Basic Safety Training - Fire Prevention and Fire Fighting (FP&FF); Proficiency in Elementary First Aid (EFA); Proficiency in Personal Safety and Social Responsibility (PSSR); Personal Survival Techniques (PST); and the additional non-STCW Entry into Enclosed Spaces Training

Advanced Fire Fighting (AFF)

Automatic Radar Plotting Aids (ARPA) Training

Company Security Officer Training (non-STCW requirement)

Crowd Management Training

Electronic Chart Display and Information Systems (ECDIS) Simulator Training  
Global Marine Distress and Safety System (GMDSS) Courses Criteria (General Operator’s Certificate (GOC); Restricted Operator’s Certificate (ROC)  
High Voltage Courses Criteria (Operational and Management Levels)  
Human Element Leadership and Management (Operational and Management Levels)

Navigational Aids and Equipment Simulator Training (NAEST) (Operational Level; Management Level

Proficiency in Crisis Management and Human Behaviour Training

Proficiency in Fast Rescue Boats (PFRB)  
Proficiency in Medical First Aid  
Proficiency in Medical Care

Proficiency in Passenger Safety, Cargo Safety and Hull Integrity Training for Ro-Ro Passenger Ships

Proficiency for Seafarers with Designated Security Duties

Proficiency in Security Awareness

Proficiency for Ship Security Officers (SSO)

Proficiency in Survival Craft and Rescue Boats (other than Fast Rescue Boats) (PSC&RB)

Safety Training Requirements for Personnel Providing Direct Service to Passengers in Passenger Spaces

Shipboard Safety Officer Training (non-STCW requirement)

Ships Using Fuels Covered Within the IGF Code

Tanker Fire Fighting Requirements  
Tanker Training Courses Criteria (Basic Training for Oil and Chemical, and Liquefied Gas Tanker Cargo Operations)