Chief Mate Unlimited Navigation Syllabus

Notes

1. The syllabus is based on the HND in Nautical Science. It covers Outcomes 2 & 4 of Unit 21 (Passage Planning) and Outcome 1 of Unit 22 (Bridge Management)
2. Extracts of the Hydrographic Office publications, Nautical Almanac and Tide Tables, will be required for examinations
3. If passage planning exercises are set as examination questions extracts of relevant publications will have to be supplied
4. Formula sheets will be provided to candidates for the examination

1. Publications required for passage planning

a) Lists and outlines the contents of nautical publications required for passage planning

2. Selection of the appropriate route for a given passage

a) Explains the factors to be taken into account when determining an appropriate route for a given passage including Loadline, Oceanagraphic and Climatological factors

b) Demonstrates the use of a gnomonic chart in conjunction with a mercator chart for voyage planning

c) Explains and outlines the advantages and dis-advantages of Weather Routeing

d) Determines the appropriate Great Circle, Composite or Rhumb line track for a given ocean crossing

e) Calculates courses, distances, vertices and way points for Great Circle, Composite and Rhumb line tracks

f) Calculates and the height of tide for a given time and the time the tide will be a required height for Worldwide Standard and Secondary Ports

g) Solves tidal problems with respect to Underkeel Clearance, Air Draft and Neaping situations

h) Calculates the tidal stream flow at any time from tidal stream tables

i) Describes the factors to be considered when making a landfall

j) Explains the objectives of ship routeing schemes

k) Explains the requirements when navigating in or near Traffic Separation Schemes

l) Explains the precautions to be taken when navigating in or near the vicinity of offshore installations, safety zones and safety fairways

3. Passage plan adjustments to allow for emergency situations

a) Explains the procedures to be followed in the event of

- i) engine failure
- ii) steering gear failure
- iii) malfunction of navigational equipment
- iv) onset of adverse weather

b) Explains the hazards and procedures to be followed when navigating in the vicinity of a tropical revolving storm

c) Explains the hazards and procedures to be followed when navigating in or near ice

d) Calculates the adjustments to course and/or speed in order to rendezvous with another vessel for SAR, safety or operational purposes

4. Position fixing methods

a) Describes the most appropriate position fixing methods to be utilised in various Navigational circumstances

b) Discusses the factors that determine the appropriate interval between fixes

c) Explains terrestrial position fixing methods for coastal passages including the use of radar

d) Describes the use of systems for the continuous monitoring of position including parallel indexing techniques

e) Calculates the direction of a position line and a position through which it passes from a single solar, stellar or planetary observation

f) Calculates the most probable position from position lines obtained from simultaneous stellar observations

g) Outlines the principal and operation of electronic charts

h) Outlines the principal and operation of electronic navigational aids and position fixing systems

5. The accuracy and reliability of various position fixing methods

a) Assesses the accuracy and reliability of both celestial and terrestrial fixes, including cocked hats, with respect to both random and systematic errors

b) Calculates the gyro compass error from a solar, stellar or planetary observation

c) Calculates the deviation of the magnetic compass from a solar, stellar or planetary observation

d) Details the precautions to be observed when using continuous monitoring systems including parallel indexing

e) Explains the limitations and precautions to be taken when using electronic charts

f) Explains the limitations and precautions to be taken when using electronic navigational aids and position fixing systems

6. The statutory and international requirements regarding navigation, navigational equipment and the qualifications and fitness of watchkeeping personnel

a) Describes the requirements of current National and International Regulations navigation and collision avoidance, radio and navigation equipment

b) Describes Outlines the requirements of current Merchant Shipping (MSN), Marine Guidance (MGN) and Marine Information (MIN) Notices with respect to navigation and collision avoidance, radio and navigation equipment

c) Describes the requirements of the ISM Code with respect to navigation and collision avoidance, radio and navigation equipment

7. Bridge Procedures for both Routine and Emergency Situations

a) Explains the principles to be observed in maintaining a safe navigational watch

b) Describes the factors to be considered when determining the composition of a Bridge Team

c) Explains the organisational requirements with respect to the Bridge Team to allow for varying navigational situations and taking into account fatigue of personnel

d) Explains the requirements and procedures to be included in standing and night orders

e) Explains the bridge procedures to be followed

- i) prior to arrival in Port
- ii) before sailing
- iii) approaching areas of high traffic density or navigational hazards
- iv) when navigating in reduced visibility
- v) when handing over the navigational watch
- vi) daily whilst at sea

f) Details the information to be exchanged between the Master and Pilot in accordance with current guidance

g) Explains the requirements to ensure the adequacy of an engineering watch at different stages of a passage

h) Outlines the considerations to be taken when leading or participating in Search and Rescue operations

i) Explains the procedures when working with Helicopters and small craft

j) Analyses and determines appropriate action based upon information from a systematic radar plot of several concurrent targets