

**LAWHILL MARITIME CENTRE
SIMON'S TOWN SCHOOL
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NAUTICAL SCIENCE

**TEACHING CONTENT
(Abridged)**

**Original : 1996
Revised 2006**

Learning outcome 1: Practical competence in navigation

Grade 10.

By the end of grade 10 a learner who has achieved the prescribed competencies for this outcome will:

- a. be familiar with the terminology and procedures used in navigation;
- b. be familiar with the use of compasses and their errors;
- c. be familiar with the nautical charts used for navigation;
- d. be aware of the tools and publications used by the navigator;
- e. be able to carry out basic chartwork;
- f. be able to plan a simple coastal passage between two geographical positions.

Grade 11.

By the end of grade 11 a learner who has achieved the prescribed competencies for this outcome will:

- a. be able to carry out more complex chartwork;
- b. be able to calculate courses and distances between two geographical positions using three of the *sailings* methods
- c. be familiar with and be able to utilise the system of time used at sea;
- d. be familiar with the basic principles used for celestial navigation;
- e. be familiar with the use of prescribed nautical tables and be able to utilise the data provided by them;
- f. be familiar with the use of the marine sextant and the correction of sextant errors;
- g. be familiar with the cause and effect of tides, tidal streams and wind and be able to apply the necessary corrections to overcome them when navigating at sea.

Grade 12

By the end of grade 12 a learner who has achieved the prescribed competencies for this outcome will:

- a. be able to plot a fix using data obtained from a sextant observation of the sun;
- b. be aware of various electronic systems used for marine navigation and their basic principles of operation;
- c. be able to determine compass error by utilising bearings obtained of the sun;
- d. be aware of the basic principles of operation of radar, its use for navigation and collision avoidance;
- e. be able to solve basic relative velocity problems utilising data obtained from radar.

Learning outcome 2: Practical competence in seamanship

Grade 10

By the end of grade 10 a learner who has achieved the prescribed competencies for this outcome will:

- a. be aware of the basic construction of ships and the materials used in their construction;
- b. be familiar with the nautical terminology used onboard sea-going vessels;
- c. be aware of the roles of sea-going personnel and their management;
- d. be aware of the basic safety practices followed at sea;
- e. be familiar with the various types of cordage used at sea;
- f. be able to carry out prescribed ropework;
- g. be able to perform the duties of a member of the crew of a sailing dinghy.

Grade 11

By the end of grade 11 a learner who has achieved the prescribed competencies for this outcome will:

- a. be familiar with rules 1 to 36 contained in the international regulations for the prevention of collisions at sea and be able to apply them in realistic scenarios;
- b. be familiar with the IALA maritime buoyage system and be able to identify the various buoys and their significance;
- c. be familiar with the factors and forces affecting the handling of vessels at sea;
- d. be familiar with the basic principles and procedures used during emergency situations at sea;
- e. be familiar with the basic principles of cargo handling and the use of rigging, blocks and tackles.

Grade 12

By the end of grade 12 a learner who has achieved the prescribed competencies for this outcome will

- a. be familiar with the basic principles affecting the stability of vessels at sea;
- b. be familiar with the basic forces acting on the structure of a vessel afloat and in drydock;
- c. be aware of the documentation a vessel is legally required to carry;
- d. be familiar with the various types of vessel utilising RSA ports and their methods of loading and discharging cargo;
- e. be aware of the dangers of pollution and the basic measures taken to combat it.

Learning outcome 3: Practical competence in meteorology

Grade 10

By the end of grade 10 a learner who has achieved the prescribed competencies for this outcome will

- a. be aware of the various sources of meteorological data used by the marine navigator;
- b. be aware of the various meteorological instruments carried aboard a sea-going vessel;
- c. be familiar with the various weather signs and phenomena found at sea.

Grade 11

By the end of grade 11 a learner who has achieved the prescribed competencies for this outcome will

- a. have a basic understanding of the isobaric systems found at sea;
- b. have a basic understanding of weather reports made at sea;
- c. be familiar with the effects of weather on the operation of ships at sea.

Grade 12

By the end of grade 12 a learner who has achieved the prescribed competencies for this outcome will:

- a. have an understanding of the weather patterns found in various parts of the globe;
- b. have an understanding of the influence of sea currents on weather;
- c. be able to explain the causes of various weather phenomena.

Learning outcome 4 : Practical competence in communications

Grade 10.

By the end of grade 10 a learner who has achieved the prescribed competencies for this outcome will

- a. be familiar with the basic methods of communication at sea;
- b. have a basic understanding of the procedures followed and codes used with the various methods of communication;
- c. be familiar with the phonetic alphabet used at sea;
- d. be familiar with the single meanings of prescribed flags used at sea.

Grade 11

By the end of grade 11 a learner who has achieved the prescribed competencies for this outcome will

- a. be familiar with the use of distress, urgency and safety traffic at sea;
- b. be able to compile a distress, urgency or safety message for transmission;
- c. be aware of the practices used for effective and efficient communications at sea.

Grade 12

By the end of grade 12 a learner who has achieved the prescribed competencies for this outcome will:

- a. have a basic understanding of the Global Maritime Distress and Safety System used at sea;
- b. be able to read a flashing light at 5 words per minute.