

Yachtmaster Ocean Theory Course Syllabus

1. The earth and the celestial sphere

Definition of observer's zenith and position of a heavenly body in terms of latitude, longitude, GHA and declination

Right angle relationships, latitude and co-lat, declination and polar distance

Relationship between GHA, longitude and LHA

Tabulation of declination in nautical almanac

Rate of increase of hour angle with time

2. The PZX triangle

The tabulated components of the triangle, LHA, co-lat and polar distance

The calculable components, zenith distance and azimuth

Relationship between zenith distance and altitude

Introduction to the tabular method of solution in the Air Navigation Tables and the basic sight form

The use of calculators for the solution of the PZX triangle

3. The sextant

Practical guide to the use and care of a sextant at sea

Conversion of sextant altitude to true altitude

Application of dip, index error and refraction

Correction of side error, perpendicularity, index error and collimation error

4. Measurement of time

Definition of, and relationship between, UT, LMT, standard time and zone time

Rating of chronometers and watches

5. Meridian altitudes

Forecasting time of meridian altitude

Reduction of meridian altitude sights

6. Sun, star and other sights

Reduction and plotting of sun sights using

Air Navigation Tables

Awareness of use of calculator for sight reduction

The plotting of sun-run-sun meridian altitude

Awareness of the reduction and plotting of sights obtained from stars, moon and planets

7. Compass checking

Use of amplitude and azimuth tables systems and/or calculator

8. Satellite Navigation Systems

Principles and limitations of use of all systems

9. Great circle sailing

Comparison of rhumb lines and great circles

Vertices and composite tracks

The computation of a series of rhumb lines approximating to a great circle by use of gnomonic and Mercator projections

10. Meteorology

General pressure distribution and prevailing winds over the oceans of the world
Tropical revolving storms, seasonal occurrence and forecasting by observation

11. Passage planning

Publications available to assist with planning of long passages (routeing charts, ocean passages of the world and other publications)

Preparation for ocean passage including survival equipment, victualling, water and fuel management, chafe protection, spares and maintenance

12. Passage making

Navigational routine

Watchkeeping

Crew management

13. Communications

Satellite and terrestrial systems

Weather information