Yachtmaster Ocean Theory 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 rhomb lines and great circles
- Vertices and composite tracks
- The computation of a series of rhomb 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 (routing 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