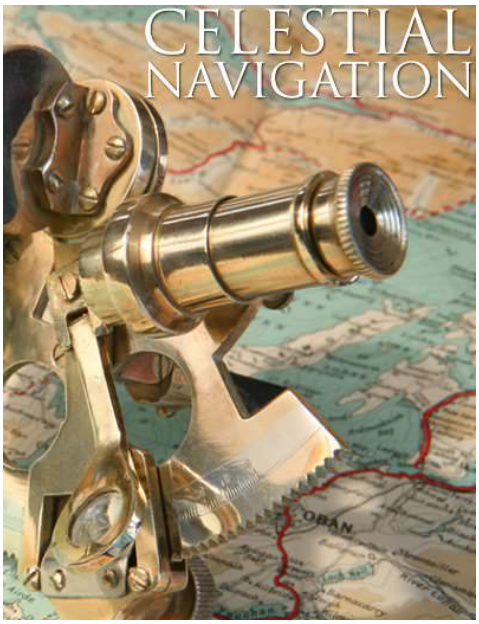
ASA 107 - CELESTIAL NAVIGATION

OVERVIEW:

ASA 107 Celestial Navigation introduces the principles and techniques used to navigate by the sun, moon, stars, and planets. You'll learn how to use a sextant, apply corrections for accurate altitude measurements, and calculate your position using celestial bodies. Key skills include converting time, determining latitude by the sun or Pole Star, and solving the navigational triangle to plot your location on a chart. Through practical exercises, you'll gain the knowledge to plot celestial lines of position and advance them to determine your boat's exact position during ocean passages. This course is essential for anyone planning long-distance voyages or who wants to deepen their navigation skills.



PREREQUISITES:

- ASA 105, Coastal Navigation
- The ability to demonstrate competencies in all knowledge and skills elements of that Standard.

STUDY MATERIALS:

- ASA 107 Course Materials

ASA 107 - CELESTIAL NAVIGATION STANDARDS

AMERICAN SAILING

KNOWLEDGE:

1. Convert longitude into time.
2. Convert standard time and zone time to GMT and vice versa.
3. Calculate the zone time given longitude.
4. Calculate the chronometer (or watch) error given a previous error and the daily rate.
5. Apply the corrections for index error, dip of the horizon, and total correction to convert sextant altitudes of the sun, stars, planets, and moon to true altitudes.
6. Calculate the time of meridian passage of the sun and calculate the boat's latitude from the observed meridian altitude of the sun.
7. Determine the latitude at twilight by means of the Pole Star.
8. Solve the navigational triangle using a navigation table and show all appropriate work.
9. Plot celestial lines of position on a Mercator projection or on a universal plotting sheet.
10. Calculate the times (ship's and GMT) of sunrise, sunset and twilight.
11. Determine the approximate azimuths and altitudes of the navigational stars and planets at twilight.
12. Calculate and plot the lines of position obtained from observations of several celestial bodies at twilight and thus find the boat's position.
13. Advance the LOP obtained from a sun sight to another LOP obtained from the sun at a later time and find the boat's position using a running fix (sun-run-sun).
14. Calculate the true bearing of a low altitude celestial body in order to determine the error and deviation of the compass.