

NAV 2 CERTIFICATION STANDARDS

Outcome: To safely plan and navigate a coastal passage aboard a vessel during daytime, at night or in restricted visibility using advanced electronic navigation.

Recommended Equipment: Nav 2 courses and examinations may be conducted and tested in a classroom, virtually, or on a vessel, and with access to an electronic navigation device required.

Prerequisite: The prerequisite for Nav 2 certification is Nav 1 certification.

Certification Requirements: Successfully complete the following knowledge and skill requirements, including an online examination.

Practical Skills

1.0 Charts

1.1 Update electronic charts.

- 1.1.1 Check chart update information: date of revision, and Local Notice to Mariners (LNM) if available.

2.0 Operation of Electronic Navigation Systems

2.1 Convert True, Compass, and Magnetic readings.

2.2 Demonstrate the use of different types of waypoints, including turning, clearing, departure, destination, hazards, notations, MOB, anchor, reference.

2.3 Determine accuracy of boat speed generated by knotmeter and understand the consequence of inaccuracies resulting from true wind speed (TWS), autopilot, and tidal current calculations.

3.0 Compass

3.1 Convert magnetic bearing of an object using a relative bearing.

4.0 Building a Route

4.1 Generate 3 Es (ETD-ETE-ETA), considering hazards, ship channels, tide, current and weather considerations.

- 4.1.1 Demonstrate a route, including naming conventions, track to route conversion, multiple routes based on distance offshore, hazards.

- 4.1.2 Verify route for a safe passage.

4.2 Build a route using waypoints points as a perimeter (“picket fence”) to keep a safe distance off a prescribed area.

4.3 Be familiar with navigational fog tactics such as buoy hopping, deliberate offset, and running a contour.

5.0 Passage Planning

5.1 Include appropriate weather information.

- 5.1.1 Evaluate different weather and sea state forecast models.

- 5.1.2 Integrate weather into your plan.

- 5.2 Prepare a passage plan to navigate safely into or out of an unknown port taking into account the following factors:
- 5.2.1 Tide & current
 - 5.2.2 Weather
 - 5.2.3 Navigation

6.0 Backup Navigation (Emergency Preparedness)

- 6.1 Demonstrate keeping a ship's log as part of emergency preparedness.

Knowledge

1.0 Tides & Currents

- 1.1 Understand shapes of tide and current graphs and their use.
- 1.1.1 Recognize shapes of diurnal/semidiurnal/mixed tide graphs.
 - 1.1.2 Recognize that different charts authorities may use different tide datums.
 - 1.1.3. Explain the relevance for reviewing the full tide cycle and what point in the cycle your passage will occur.
 - 1.1.4 Explain how to determine tide height and tidal current on different applications.

2.0 Charts

- 2.1 Identify potential sources of chart inaccuracy and other sources to verify position and reduce risk.
- 2.1.1 Sources
 - 2.1.1.1 datums, (including survey dates)
 - 2.1.1.2 timing of updates
 - 2.1.1.3 quality of source and date of survey
 - 2.1.1.4 quality of reproduction across charts produced by different hydrographic sources (governments or non-government)
 - 2.1.2. Verification alternatives
 - 2.1.2.1 Google Earth
 - 2.1.2.2 Local knowledge
 - 2.1.2.3 Visual
 - 2.1.2.4 Depth sounder
 - 2.1.2.5 Radar
 - 2.1.2.6 Other charts
- 2.2 Understand the benefits and limitations of offsets (offsetting the depiction of the vessel on the screen) on an electronic chart

3.0 Electronic Navigation & Piloting

- 3.1 Describe how waypoints can reduce zoom error.
- 3.2 Recognize when to adjust for set and drift using GPS and knotmeter.
- 3.2.1 Describe how to adjust course to compensate for set and drift.
 - 3.2.2 Understand potential difference of speed on a GPS and knotmeter.
- 3.3 Explain how Global Navigation Satellite Systems (GNSS) work.
- 3.3.1 Describe both different governmental and private satellite systems and their differences.

4.0 Compass

- 4.1 Understand how to swing ship and generate a deviation card using a hand-bearing compass.
 - 4.1.1 Describe a method of determining deviation for a vessel's steering compass using landmarks, hand-bearing compass, or GPS.

5.0 Building a Route

- 5.1 List pros and cons of reversing a route and auto-route building.

6.0 Passage Planning

- 6.1 Compare the information in different publications such as federal publications (Light List, Coast Pilot, Local Notices to Mariners) and commercially produced cruising guides.
- 6.2 Identify where to source coastal/long-range weather.
- 6.3 Explain the factors to consider when determining the time to enter or exit an inlet or cross a bar.
- 6.4 If under sail, describe navigational considerations of favored tack and laylines.

7.0 Backup Navigation (Emergency Preparedness)

- 7.1 Recognize ways to transfer routes/waypoints between devices.
- 7.2 Understand how to keep and use a Ship's Log
 - 7.2.1 Understand how to find information from electronic devices to complete a ship's log.