ASA 119 - MARINE WEATHER ENDORSEMENT

AMERICAN SAILING

OVERVIEW:

ASA 119 Marine Weather Endorsement provides a comprehensive introduction to marine weather, covering the key concepts that every sailor needs to understand. You'll learn to interpret wind patterns, atmospheric pressure, cloud formations, and sea states, along with how these elements interact to shape weather conditions. The course explores global weather systems, including strong wind systems and their behavior, and teaches you to use weather maps, barometers, and satellite data. You'll also discover how to make on-board forecasts using traditional and modern tools. By the end of the course, you'll be able to plan voyages with an eye on the weather, ensuring safer and more enjoyable sailing.

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KNOWLEDGE:

BASIC CONCEPTS:

1. Describe the role of marine weather in boating plans, particularly wind forecasting.
2. Describe the relationship of temperature, precipitation, visibility, wind, and waves and their impact on forecasting.
3. Describe wind terminology and units used in speed, distances, temperatures and pressures.
4. Utilize data from the Ocean Prediction Center, National Data Buoy Center, and Marine National Weather Service (NWS) Charts.

PRESSURE AND WIND:

5. Describe the relationship between pressure and wind, including the flow of wind around highs, lows, ridges and troughs.
6. Convert apparent wind to true wind.
7. Calibrate and take readings from aneroid and digital barometers.
8. Describe pressure distributions and related labeling practices on weather maps.
9. Predict wind speed and direction from isobars on a weather map.

GLOBAL WINDS AND CURRENTS:

10. Describe the basic properties of the atmosphere and its influence on wind and weather.
11. Describe basic air mass classifications and vertical stability.
12. Describe the role of equatorial heating in establishing the doldrums, horse latitudes, trade winds and prevailing westerlies.
13. Describe the role of the poles in generating low fronts, and how these subsequently cross the mid-latitudes of the globe.
14. Describe the origins and behavior of winds aloft and how they contribute to the development and transport of surface systems around the globe.
15. Describe the distribution of ocean currents around the globe and how to predict their values for the purpose of voyage planning.

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KNOWLEDGE (CONTINUED):

STRONG WIND SYSTEMS:

16. Describe forecasting conventions and warnings available for strong wind systems.
17. List the distinctions between lows and fronts, and between tropical and extra-tropical storms.
18. Describe how to predict squall behavior.
19. Describe how to find and using satellite wind measurements.
20. Describe typical behaviors of tropical depressions, storms, and hurricanes.

CLOUDS, FOG, AND SEA STATE:

21. Describe and identify 10 basic cloud types and what they might indicate.
22. Describe the sequence of clouds expected during a frontal passage.
23. Describe how fog forms and how it is forecasted.
24. Describe the practical distinctions between sea fog and radiation fog and between swells, wind waves and ripple.
25. Describe how to predict wave height and speed based on wind speed, duration, and fetch.
26. Describe the Beaufort Wind Force scale that relates wind speed to sea state.

WIND AND TERRAIN:

27. Describe how the presence and topography of land affects wind flow over adjacent waters.
28. Describe prominent local winds such as: sea breezes, land breezes, channeling & gap winds, blocking & lifting, and downslope winds.
29. Describe the interaction between thermal winds and pressure system winds.

WEATHER MAPS:

30. List types of weather maps available and how to access them at home and underway.
31. Describe the process of weather routing, including sequencing of analyses and forecasts to confirm forecasts.
32. Describe how to access and use GRIB forecasts, taking into account their pros and cons compared to analyzed products prepared by meteorologists.
33. Describe how to use the 500-mb maps and weather discussions to help evaluate surface forecasts.
34. Describe how to use shipboard observations of wind and pressure to evaluate analyses and the subsequent forecasts.

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KNOWLEDGE (CONTINUED):

SOURCES OF WEATHER DATA:

35. Compare the use of both traditional and modern sources of climatic data for planning the time and route of voyages – for inland and coastal voyaging, as well as ocean crossings.
36. List sources for weather data underway and wireless options for obtaining it.
37. Describe the distinctions and pros and cons of commercial weather services compared to free public services from the NWS.
38. Describe the role of professional weather routing services and how they might fit into voyaging plans.

ON-BOARD FORECASTING AND TACTICS:

39. Describe the proper use of barometer, wind speed, wind direction, clouds, and sea state for shipboard forecasting.
40. Describe how to gauge the direction of winds aloft from cirrus cloud patterns.
41. Give examples of maritime weather proverbs and which ones have value in forecasting.
42. Describe the role of weather routing in improving sailing tactics.

SOUTHERN HEMISPHERE WEATHER:

43. Describe unique aspects of Southern Hemisphere weather.
44. List sources for weather information specific to the Southern Hemisphere.