

OCEANOGRAPHY

The laboratory is configured to support the oceanographic research and practical activities for the following disciplines: **Meteorology and Oceanography, Marine Hydrography and Hydrographic Insurance, Prevention of Marine Environment Pollution, Safety of Life at Sea and Protection of the Marine Environment** with the following objectives:

General objectives:

- building skills necessary to obtain and use oceanographic information so as to adapt the vessel's voyage / course to the conditions existing in the respective areas of navigation
- developing skills for the execution of reference hydrographic works
- making use of oceanographic parameters in order to estimate the effects of marine pollution on the coastal ecosystems

Specific objectives

1. Operation and use of nautical documents and of hydrometeorological information obtained on board;
2. Making correct calculations with reference to ocean tides so as to determine the necessary elements for safe port entrance and navigation in tidal areas;
3. Determination of physical and chemical properties of seawater;
4. Modeling of ocean currents systems that have a significant impact on voyages of ships;
5. Identification of potential species of the marine ecosystems qualitative structure which may possibly be affected by pollution coming from ships;
6. Acquiring methods and procedures of bathymetric rise;
7. Identifying components and principles of equipment operation for hydrographic and topogeodezical rises, and determining the nature of the seabed;
8. Correct operation and use of the equipment for hydrographic rises, and determination of the nature of the seabed.

Equipment:

- ◆Devices with integrated sensors for measuring; flow speed, direction, depth and temperature of the currents in the coastal marine environment. Global Positioning System (GPS)



- ♦The data system relating to hydrometric stations within the DHM network Black Sea;
- ♦The radar and satellite data system, data from the models forecasting the state of the sea, given the by VAGROM module, national weather data, and data from the GTS through The National Integrated Meteorological System (SIMIN)
- ♦ Instruments and technical devices for measuring and recording the main oceanographic parameters, i.e. salinometer, Sechi disk , device for measuring the tide, hydrographic, Forel colorimetric kit, etc.
- ♦ Specialized software for correlating tide calculations, oceanographic forecast in real time, and navigation route optimization;
- ♦Pilot books, currents atlas, ATTs, documentaries on the types of information received on board, in real time (notices, warnings, synoptic maps with wave modeling and swell systems, etc.)
- ♦Collections of species (kept in formalin) specific to marine ecosystems, for the study of the effects of marine pollution;
- ♦Specialized software for processing information obtained from hydrographic observations
- ♦Desks and chairs to accomodate 16 students



List of works and experiments that can be carried out:

1. *Measurement, registration and determination of oceanographic parameters, with specialized devices, aboard ships*
2. *Identification and interpretation of wave elements, of currents, and tide, transmitted by the help of synoptic maps, and modeling their parameters with specialized softs.*
3. *Analysis of the influence of oceanographic factors on navigation (drift current, tidal currents, waves) through navigation and stability calculuses, obtained aboard ships.Utilization of calculus programmes for the standard ports, and for the secondary ports.*
4. *Use of the devices existing at the hydrommetric stations. Making reference calculuses to determine sea level and depths*
5. *Modeling, in real time, of the hydrocarbon dispersions, which appear as a result of ship pollution, under the influence of oceanographic factors. Making use of the following programs, GOODS, GNOME and ADIOS.*
Identification of species during the operation of ballast water management.Estimation of th effects of ship pollution, on the qualitative structure of marine ecosystems.