Implementation Group
Doc.: ESDC/2026/116
Date: 18/02/2026
Origin: ESDC Secretariat

Country	Institution	Common Module	ECTS
RO	**RNA**	**Oceanography**	**2.0**

Service(s): **Navy** **Language:** **English**	**Minimum Qualification of Instructors:** • Bachelor's in Navigation / Master's degree in Nautical Sciences. • English: Common European Framework of Reference for Languages (CEFR) Level B1 or NATO STANAG Level 2+.
SQF MILOF:	• **Competence area** – Military technician. • **Learning area** – Employment of weapon/ operating platform/ systems. • **Organisational level** – Single Arm/Branch.

Prerequisites for participants:

- English: Common European Framework of Reference for Languages (CEFR) Level B1 or NATO STANAG Level 2.
- Minimal knowledge of the principles of fluid mechanics and physics.

Contents of the Module:

- Use of oceanography equipment on board the ship.
- Oceanographic features and phenomena represented on prognosis charts.
- Dangerous phenomenon for the ship, sensors, and crew.
- Acoustic parameters and propagation loss mechanism of sound waves.
- Optimisation of sonar performance according to the sound speed profile.
- Planning sea routes in accordance with METOC information to prevent shipping accidents and other situations affecting the safety of the mission.
- Use NATO METOC documents and oceanographic information.

Learning outcomes			
	Know-ledge	• Basic knowledge of the main topics of general and military oceanography. • Understand the Oceanographic Weather Organisation (METOC) within NATO.	
	Skills	• Enhance capabilities in navigation, hydrography and ship manoeuvring at the operational level.	• Planning route, executing navigational watch in safe conditions and ship management in order to ensure a good seaworthiness of the ship, even if the ship is alone or in a task group or task force.
	Respon-sibility & Auto-nomy	• Independently collect, manipulate, and interpret oceanic / atmospheric / geospatial datasets (observations, in situ measurements, and model outputs) to produce operationally relevant assessments for naval use.	• Assume responsibility for METOC-informed decisions by analysing the operational METOC data flow (prognosis charts, acoustic conditions, dangerous phenomena) and translating it into route/sonar optimisation recommendations, with appropriate documentation and mission-safety orientation.

Verification of learning outcomes:

- **Observation:**
  - Class time is primarily assigned to lecturing. Different materials from the supplementary readings will be used in order to illustrate some of the basic points in the lecture as scheduled for that day, in order to encourage discussions and debates about these focus points.
  - Methods of teaching/lecturing are: lecturing, heuristic conversation, explanation, discussions/debates, case study, problem-solving, simulation of situations, methods of group work, individual and frontal methods for developing critical thinking, and self-study of references.
- **Tests:** The students will work out a course project in selected groups, and at the end of the module, a summative test will be applied.
- **Evaluation:** The final exam will consist of: an examination based on a multiple-choice test and applications of the taught subject. The student should pass the final assessment with a minimum of 5/10.

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Revised by CAPT (N) Nedko Dimitrov / Chairman LoD-02 ..... 01 09 2025
Revised by Col. Catalin Popa / Chairman LoD-11 ..... 03 02 2026
Revised by Col Assoc. Prof. Harald Gell, PhD / Chair IG 04 02 2026
Revised by Assoc. Prof. Nikolaos Karadimas, Chairman LoD-08 ..... 13 02 2026
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Module details:

Main Topic	Recom-mended WH for the residential phase	Details
Introduction to military Oceanography.	6	• The object of Oceanography. History of military oceanography. • Physical-chemical properties of the seawater. • General marine topography. • Oceanic data, instruments and collection methods.
Dynamics of marine waters.	6	• Waves: wind waves, swell and other forms of movement of marine waters and their influence on navigation. • Ocean currents flow. Characteristics of the main ocean currents influence navigation. • Ocean waters • Fronts • Tides: The tides phenomenon. Applied terminology.
Underwater Acoustics/Sonar	4	• Basic concepts, acoustic parameters. • Propagation loss mechanism.
NATO METOC Structure and Support	3	• AMETOC Series Standards. • ATP 32- Oceanographic Support. • Sonar Range Prediction Software. • OPTASK METOC APP 11.
Using METOC data in route planning	4	• Optimisation in route planning, executing navigational watch in safe conditions and ship management to ensure good seaworthiness of the ship, even if the ship is alone or in a task group or task force.
Total WH (contact hours)	**23**	

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Additional hours (WH) to increase and assess the learning outcomes (during residential phase):		
Self-studies	25	• Atodiresei D. (coord.), Meteorology and Oceanography, INS Manual, Romanian Naval Academy Publishing House, 2025. • AMETOCP 2.1. EDB V1 NATO CATALOGUE OF METEOROLOGICAL AND OCEANOGRAPHIC TACTICAL DECISION AIDS. • AMETOCP 2EdA – NATO METEOROLOGICAL SUPPORT MANUAL. • AMETOCP 4 VOL I ED A NATO METEOROLOGICAL AND OCEANOGRAPHIC CODES MANUAL. • APP 11 OPTASK METOC. • ATP 32 ED E V2 NATO MILITARY OCEANOGRAPHIC AND RAPID ENVIRONMNETAL ASSESMENT SUPPORT PROCEDURES. • *** FN-14.9 Meteorology Manual in Navy Forces, Romanian Maritime Hydrographic Direction, 2009. • *** FN-14.6 Military Oceanography Support (STANAG 1171), Romanian Maritime Hydrographic Direction, Constanta, 2009. • *** FN-14.5 NATO maritime meteorology procedures and services (STANAG 6006), chapter II (Meteorologic services for NATO Navy Forces), chapter III (Navy Forces Meteorology Reports) and chapter IV (Meteorologic Communications), Romanian Maritime Hydrographic Direction, Constanţa, 2008. • *** Meteorological Office. Marine Observer´s Handbook, 11th edition, London, HMSO, 1995. • *** Meteorological Office. Meteorological for Mariners, 3rd edition, London, HMSO, 1996. • *** Maritime Meteorology, 2nd edition, Thomas Reed Publications, 1997. • *** Admiralty List of Radio Signals, Maritime Safety Information Services, vol 3, U.K. Hydrographic Office. • *** Cloud Sheet, (revised edition), World Meteorological Organization, Geneva, 1986. • *** U.S. Pilot Charts, Defense Mapping Agency, United States Naval Oceanographic Office, Washington D.C. • *** Routing Charts, United Kingdom Hydrographic Office, London. • *** Admiralty Tide Tables, Hydrographer of Navy, U.K. • *** Admiralty Sailing Directions (Pilot of maritime regions), UK Hydrographic Office. • *** Ocean Passages for the World, United Kingdom Hydrographic Office, London.
Test / evaluation / assessment	2	• Examination based on a multiple-choice test and applications of the taught subject.
Total WH	**50**	The detailed amount of hours for the respective main topic is up to the course director according to national law or home institution's rules.

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List of Abbreviations:

AMETOC ..... Allied meteorology and oceanography
APP ..... Allied Procedures Publication
ATP 32 ..... Allied Tactical Publication
B1, C1 ..... CEFR Levels
BIP ..... Blended Intensive Programme
CEFR ..... Common European Framework of Reference for Languages
ECTS ..... European Credit Transfer and Accumulation System
ESDC ..... European Security and Defence College
IG ..... Implementation Group
METOC ..... Meteorology and Oceanography
NATO ..... North Atlantic Treaty Organization
NTPRO ..... Navi Trainer Professional
OPTASK ..... Operation tasking
RNA ..... Romanian Naval Academy “Mircea cel Bătrân”
RO ..... Romania
STANAG ..... Standardisation Agreement
WH ..... Working Hour (60 minutes)

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