INT-MO-37111 REA SUPPORT TO MARITIME OPERATIONS

COURSE SYLLABUS

Course Name	**Rapid Environmental Assessment support to Maritime Operations**				
ETOC Code	INT-MO-37111				
Discipline	INT - Intelligence				
Area	MO - Meteorology & Oceanography				
Duration	1 Week (5 days)				
POC	Maritime GEOMETOC COE, Knowledge Management Branch Head, info@mgeometoccoe.org				
Learning activities	**Theoretical**	**Tutorials**	**Practical**	**Self-Guided Study**	
Hours	**21**	**-**	**9**	-	
Assessment type	Knowledge assessment	**Total**			
Hours	**2**	**32**			
Course Director\ Lead Instructor	Maritime GEOMETOC COE, Products and Services Branch Head	**Security Clearance**	NU	**Total number of available seats**	12
Delivery method	Residential	**Mobile Delivery**	No	**Language proficiency**	English 3322 IAW STANAG 6001
Rank requirements	NCO: OR-5 thru OR-9 Officer: OF-1 thru OF-5	**Number of Iterations per year**	1	**Course requirements**	ADL 037 ADL 223
Module outline	The aim of this course is to provide GEOMETOC personnel with increased knowledge and understanding regarding REA operations in support of Maritime Operations.				
Learning outcomes	By the end of the module, students should be able to: 1. Identify NATO doctrine that guides allied REA operations, as well as Geospatial, Meteorological and Oceanographic support for military activities. 2. Understand how environmental conditions impact naval operations. 3. Identify which environmental parameters are critical to all spectrum of naval operations. 4. Recognize numerical modelling, in situ observations & remote sensing strategies & technology 5. Produce and manipulate REA products to support military decision making (Mission Impact Diagrams – MID, Tactical Decision Aids – TDA, Additional Military Layers – AML, Amphibious Operations Graphic – AOG).				
Module reference material and bibliography	• NATO Geospatial Support Policy (MC 0296) • NATO Policy on Meteorological & Oceanographic Support to NATO Forces (MC 0594) • NATO Recognised Environmental Picture Concept (MC 0632) • NATO Allied Joint Doctrine for Maritime Operations (AJP-3.1) • NATO Allied Joint Doctrine for Geospatial Support (AJP-3.17) • NATO Allied Joint Doctrine for METOC Support (AJP-3.11) • NATO Military Oceanographic and REA Support Procedures (ATP-32) • Lecture Notes				

Module Activity Breakdown

Activity (lecture, practical, assignment)	Contents	Th	Tu	Pr	SG	Lecturer
Lecture 0 Course overview	- Welcome and participants introduction - NATO Maritime GEOMETOC COE overview - Course overview and learning outcomes - References and bibliography - Administrative remarks	1				Cdr Pinto da Silva, MGEOMETOC COE

Lecture 1 NATO Geospatial (GEO), Meteorology and Oceanographic (METOC) principles, concepts and doctrine	- NATO GEO Policy - NATO GEO Doctrine - NATO METOC Policy - NATO METOC Doctrine	2				Lt Cdr Xavier Guerreiro (GEO), MGEOMETOC COE Cdr Nádia Rijo (METOC), MGEOMETOC COE
Lecture 2 NATO REA and REP concepts and doctrine	- Rapid Environmental Assessment (REA) - Recognized Environmental Picture (REP)	1				Lt Cdr Xavier Guerreiro, MGEOMETOC COE
Lecture 3 Maritime Operations Weather Impacts	- Naval warfare vs Maritime operations - ASW (underwater sound propagation) - NMW (bottom type) - AAW (wind, waves and cloud cover) - ASUW (waves and currents) - AMPHIBOPS (topo-bathymetry and waves) - Submarine warfare (SVP, ocean currents) - Seabed warfare (Bathymetry, bottom type)	2				Lt Cdr Tristão de Brito, PRT N (Guest Speaker)
Lecture 4 Environmental parameters impacting naval operations	- Introduction to the geophysical dimension of the maritime battlespace - Environmental parameters impacting naval operations	2				Cdr Quaresma dos Santos, PRT N
Lecture 5 Operational modelling	- Introduction to numerical modelling - Modelling models and strategies - Modelling infrastructure and tools - Products and services - Information dissemination	4				Mr. Paul Mota, PRT N (Civ)
Lecture 6 REA technology	- In situ and remote sensing strategies - Underwater assets - Surface assets - Aerial assets - Remote sensing techniques - Manned vs unmanned survey platforms	2				Lt Cdr Florin Constantinoiu, ROU N (Guest Speaker)
Lecture 7 REA survey planning	- REA planning and direction - Types of survey - Fundamental requirements - Preliminary work and planning - Field preparations - Conduct of survey - Miscellaneous tasks	2		1		Cdr Pinto da Silva, MGEOMETOC COE
Lecture 8 REA products 01	- Mission Impact Diagrams (MID) - Purpose and utility of MID - Data sources for MID creation - MID thresholds - MID practical exercise	1		2		Lt Cdr Gonçalves Tavares, PRT N
Lecture 9 REA products 01	- Tactical Decision Aids (TDA) - TDA practical exercise	1		2		Lt Cdr Gonçalves Tavares, PRT N
Lecture 10 REA products 02	- Additional Military Layers (AML) - AML specification overview - AML practical exercise	1		2		Lt Cdr Resende da Silva, PRT N
Lecture 11 REA products 03	- Amphibious Operations Graphic (AOG) - AOG specification overview - AOG practical exercise	1		2		Lt Sofia Henriques, PRT N
Lecture 12	- NATO formats and standards - Web Services (OGC)	1				Lt Cdr Xavier Guerreiro,

REA Information dissemination	- File exchange (GeoTiff, ShapeFile, AML, GRIB2, netCDF4)					MGEOMETOC COE Lt Cdr Gonçalves Tavares, PRT N
	Total **30**	**21**		**09**		