



11.	Course unit:	NE/MT2012/11/11/M1						
MATHEMATICS– module 1								
Semester	Weeks in the semester	Hours in a week			Hours in the semester			ECTS
		A	C	L	A	C	L	
1	15	1	2		15	30		7
2	15	1	2		15	30		7
3	15	1	2		15	30		7

I. Course unit aims

Students will get familiar with various mathematical methods used in navigation, acquire skills of handling these methods, and have better understanding of fundamental and professional subjects.

II. Preliminary requirements

The fundamental scope of mathematics taught at a secondary school.

III/1. Learning outcomes and syllabus

Syllabus

SEMESTER 1	MATHEMATICS	AUDYTORYJNE	15 HOURS.
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1. Differential calculus of single real variable function: supplementary knowledge of cyclometric functions, limits of sequences and functions, function derivative and differential, derivatives and differentials of higher orders, theorems on mean value, Taylor formula, monotonicity, extremes, convexity and concavity, points of inflexion, asymptotes, deL'Hospital rules, investigation of a behaviour of a function.
2. Integral calculus of single real variable function: indefinite integral, fundamental integration methods and theorems, integration of rational, irrational and trigonometric functions, definite integral (Riemann's definition), fundamental theorems and properties of definite integral, Newton-Leibnitz theorem, improper integrals, use of definite integral in geometry.
3. Differential and integral calculus of multi-variable function: definition of two-variable function, boundary and continuity of two-variable function, partial derivatives, derivatives of the composite function, exact differential, partial derivatives and exact differentials of higher orders, Taylor formula, multi-variable function extremes, definition and properties of double integral and triple integral, reduction of multiple integrals to iterated integrals, curvilinear directed and undirected integrals, Green's theorem.

SEMESTER 1	MATHEMATICS	TUTORIALS	30 HOURS
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The tutorials cover topics and problems lectured.