

Faculty of Maritime Studies / MARITIME MANAGEMENT AND LOGISTICS / MATHEMATICS

Course:	MATHEMATICS			
Course ID	Course status	Semester	ECTS credits	Lessons (Lessons+Exercises+Laboratory)
1257	Mandatory	1	7	3+2+0
Programs	MARITIME MANAGEMENT AND LOGISTICS			
Prerequisites	No prerequisites for course enrollment and attending.			
Aims	Through this course students acquire knowledge of elementary mathematics, linear algebra, differential and integral calculus that are necessary for the study of other applied maritime, computer and maritime technological disciplines which are taught at the study programme.			
Learning outcomes	Expected learning outcomes: It is expected that after passing the exam of the course Mathematics the student will be able to: 1. Describe basic concepts of set theory and mathematical logic, as well as sets of numbers. 2. Explain the concepts of variation, permutation and combination, and to apply the binomial formula in easier problems. 3. Define a vector and arithmetical operations on vectors, and apply scalar, vector and mixed products of vectors for solving various geometric problems. 4. Define the concept of matrix, to perform operations on matrices, and to calculate the values of determinants. 5. Solve and discuss systems of linear equations by using Gaussian elimination method or Cramer's rule. 6. Define the concept of function, explain the basic notions of a real function of one variable (domain, parity, periodicity, limit and continuity). 7. Describe the basic concepts of differential calculus of functions of one variable. 8. To investigate the flow of a real function of one real variable using differential calculus. 9. Calculate indefinite integrals by using table of integrals, the method of change of variables, the method of integration by parts or method for integrating rational functions. 10. Define the definite integral and by using Newton-Leibniz formula to find the area of the plane figure, the volume of rotating body, the surface area, as well as the arc length of the curve			
Lecturer / Teaching assistant	Prof.Dr. Romeo Meštrović (Professor), Dr. Stevan Kordić (Assistant)			
Methodology	Lectures and computational exercises. Learning and individual work of homework. Consultations.			
Plan and program of work				
Preparing week	Preparation and registration of the semester			
I week lectures	Basic concepts of set theory and mathematical logic. Different algebraic structures. Sets of numbers. Principle of mathematical induction.			
I week exercises	Exercises related to the areas from the previous lecture.			
II week lectures	Combinatorics. Binomial formula.			
II week exercises				
III week lectures	The concept of vector and operations on vectors. Linear dependence of vectors. Scalar, vector and mixed products of vectors.			
III week exercises				
IV week lectures	Matrices, types of matrices and operations on matrices. Determinants and their properties.			
IV week exercises				
V week lectures	The inverse matrix. Matrix equations. The rank of a matrix. Systems of linear equations.			
V week exercises				
VI week lectures	Kronecker-Capelli theorem. Methods for solving systems of linear equations.			
VI week exercises				
VII week lectures	Preparation for the First Compulsory Assignment			
VII week exercises	Preparation for First Compulsory Assignment.			
VIII week lectures	The First Compulsory Assignment.			
VIII week exercises				
IX week lectures	The limit of sequences and its properties. The concept of limit of a function and its properties.			
IX week exercises				
X week lectures	Basic limits. The continuity of a function. The concept of derivative and differentiability of a function and its geometric interpretation. The rules for determining derivatives.			

X week exercises						
XI week lectures	Table of derivatives of elementary functions. Properties of derivatives. Higher orders derivatives. The basic theorems of differential calculus. Elements for examinations of functions.					
XI week exercises						
XII week lectures	The concept of the antiderivative and the indefinite integral. The properties of indefinite integral. Table of integrals of elementary functions.					
XII week exercises						
XIII week lectures	The Second Compulsory Assignment.					
XIII week exercises						
XIV week lectures	Methods for integrating. The integration of rational functions and some classes of transcendental functions.					
XIV week exercises						
XV week lectures	The concept of definite integral. Newton -Leibniz formula. The application of definite integral.					
XV week exercises						
Student workload	Per week 7 credits x 40/30 = 9 hours 20 minutes Structure: 3 hours of lectures 2 hours of exercises 4 hours 40 minutes of individual work, including consultations During semester Teaching and the Final Exam: (9 hours 20 minutes) x 16 = 149 hours 20 minutes Necessary preparation before beginning of semester (admin., enrolment, verification): 2 x (9 hours 20 minutes) = 18 hours 40 minutes Total hours for the course: 7 x 30 = 210 hours Additional hours for preparing correction of final exam, including the taking of the exam from 0 to 30 hours Structure of the students' duties: 149 hours 20 minutes (lectures) + 18 hours 40 minutes (preparation) + 30 hours (additional work)					
Per week			Per semester			
7 credits x 40/30=9 hours and 20 minuts 3 sat(a) theoretical classes 0 sat(a) practical classes 2 excercises 4 hour(s) i 20 minuts of independent work, including consultations			Classes and final exam: 9 hour(s) i 20 minuts x 16 =149 hour(s) i 20 minuts Necessary preparation before the beginning of the semester (administration, registration, certification): 9 hour(s) i 20 minuts x 2 =18 hour(s) i 40 minuts Total workload for the subject: 7 x 30=210 hour(s) Additional work for exam preparation in the preparing exam period, including taking the remedial exam from 0 to 30 hours (remaining time from the first two items to the total load for the item) 42 hour(s) i 0 minuts Workload structure: 149 hour(s) i 20 minuts (courses), 18 hour(s) i 40 minuts (preparation), 42 hour(s) i 0 minuts (additional work)			
Student obligations			The student is obliged to follow the course and perform the obligations during semester.			
Consultations			For teacher every working week after the lecture; For assistant every working week after the lecture			
Literature			Obligatory literature: 1. R. Meštrović, Matematika, pisana predavanja, Fakultet za pomorstvo, Kotor, 2009. Additional literature: 2. P. Miličić, M. Uščumlić, Zbirka zadataka iz Više matematike I, Beograd, 1975 (in Serbian).			
Examination methods			The attendance at lectures/exercises carries 12 points, two compulsory assignments carry 32 points in total (16 points for each compulsory assignment), two homeworks carry 6 points in total; Final Exam carries 50 points. The passing grade is obtained if t			
Special remarks			No special notes.			
Comment			The consultations are carried in the day after the implementation of classes and via e-mails: romeo@ac.me (Professor) and stevankordic@live.ac.me (Assistant)			
Grade:	F	E	D	C	B	A
Number of points	less than 50 points	greater than or equal to 50 points and less than 60 points	greater than or equal to 60 points and less than 70 points	greater than or equal to 70 points and less than 80 points	greater than or equal to 80 points and less than 90 points	greater than or equal to 90 points