Stampare su carta intestata del CdS

General information	
Academic subject	***Complements of mathematics***
Degree course	*Science and Management of Maritime Activities*
Academic Year	*I*
European Credit Transfer and Accumulation System (ECTS)	9
Language	*Italian*
Academic calendar (starting and ending date)	*March-June 2022*
Attendance	*No*

Professor/ Lecturer	
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Telephone	
Department and address	*Dipartimento di Economia* *Università degli studi di Foggia* *Largo Papa Giovanni Paolo II, 1 - Foggia*
Virtual headquarters	*Microsoft Teams – 2609xn5*
Tutoring (time and day)	Monday 9.00-11.00

Syllabus	
Learning Objectives	The educational objectives of the three-year Degree Course in Sciences and Management of Maritime Activities include the qualifying objectives of class L 28 (Sciences and technologies of navigation). Specifically, the three-year degree course in Sciences and Management of Maritime Activities pursues the objective of transmitting both general and specific and professionalizing scientific methods and contents of maritime activities. The training activities are organized in such a way as to enable all future graduates to acquire fundamental knowledge of: o mathematics, physics, chemistry and computer science; o oceanography; marine geomorphology; navigation and meteorology; o private law, right of navigation; administrative law with elements of public law; international law of the sea; o business administration; o English language, in written and oral form, with reference to English for maritime traffic.
Course prerequisites	*Mathematics*
Contents	*Summing an Infinite Series* *Convergence of series with positive terms* *The ratio and root tests* *Sequences and series of functions, pointwise and uniform convergence* *Power series* *Representation of functions as Power Series* *Taylor and Maclaurin Series* *Systems of linear equations* *Matrix operations* *Linear dependence and independence* *Subspaces and bases and dimensions* *Orthogonal bases* *Determinants and their properties*

	Eigenvalues and eigenvectors *Diagonalization of a matrix* *Symmetric matrices* *Positive definite matrices* *Similar matrices* *Linear transformations* *Functions of several real variables* *Partial and directional derivatives* *Differential* *Total differential theorem* *Hessian matrix* *Local and global maxima and minima* *Functions from Rn to Rm, Jacobian matrix, differentiation of composite functions* *Implicit functions* *Regular curves* *Constrained optimization. The method of Lagrange multipliers* *Differential equations and Cauchy problems* *Linear differential equations and systems* *Local stability*
Books and bibliography	*C. Canuto, A. Tabacco, Analisi Matematica II, Springer (2014).* *M. Bertsch, R. Dal Passo, L. Giacomelli, Analisi Matematica, McGraw-Hill, Milano, 2007.*
Additional materials	

Work schedule			
Total	Lectures	Hands on (Laboratory, working groups, seminars, field trips)	Out-of-class study hours/ Self-study hours
Hours			
225	*72*		*153*
ECTS			
9			

Teaching strategy	*Lectures*
Expected learning outcomes	*Acquisition of the scientific method through a solid knowledge of basic mathematical tools. The achievement of these objectives will be achieved through lectures. Problem solving skills through the acquisition of knowledge provided by the basic scientific disciplines.*
Knowledge and understanding on:	○ The acquisition of the methodology necessary for the knowledge and understanding of the discipline.
Applying knowledge and understanding on:	○ The acquisition of the methodology necessary for the application of knowledge and understanding of the various typical aspects of the discipline.
Soft skills	• *Making informed judgments and choices* ○ critical study of the various typical aspects of the discipline both in theoretical and applicative aspects • *Communicating knowledge and understanding* ○ ability to communicate and discuss the various themes typical of the discipline

	• *Capacities to continue learning* ○ acquire the methodology necessary for learning, mastery of the discipline, the critical study of the main themes of differential and integral calculus for functions of two or more variables

Assessment and feedback	
Methods of assessment	*Written and oral exam. Partial tests are foreseen (exemptions). The student must be able to solve problems and exercises related to numerical series, power series, eigenvalues and eigenvectors, set of definition of functions of two variables, partial derivatives and directional derivatives, computation of free and constrained extremes, application of the theorem of implicit functions, systems of first order differential equations, differential equations with constant coefficients of order n, linear stability of critical points of systems of differential equations. The oral exam will relate to the theoretical topics included in the program (definitions, theorems, demonstrations).*
Evaluation criteria	• *Knowledge and understanding* ○ Ability to solve assigned problems and exercises ○ Ability to correctly answer the questions asked • *Applying knowledge and understanding* ○ Ability to solve assigned problems and exercises ○ Ability to correctly answer the questions asked • *Autonomy of judgment* ○ critical reasoning skills on the study carried out • *Communicating knowledge and understanding* ○ Quality of exposure • *Communication skills* ○ Quality of exposure • *Capacities to continue learning* ○ competence in the use of specialized vocabulary
Criteria for assessment and attribution of the final mark	*The final score is awarded out of thirty. The exam is passed when the score is greater than or equal to 18*
Additional information	