

Module card

I. GENERAL INFORMATION								
WITELON COLLEGIUM STATE UNIVERSITY DEPARTMENT Faculty of Technical and Economic Sciences								
Field of study:		Computer sciences						
Form of study:		Erasmus						
Module title:		BI.1 Mathematics I						
Module type:		Module of basic education						
Language of lecture:		English						
Year of study:	1	Forms of teaching including number of teaching hours:						
Semester (winter/summer):	winter	Lectures	Classes	Laboratory	Project	Workshop	Seminar	Other
Total number of ECTS credits:	6	15	15	-	-	-	-	-
Form of completion:		Exam						
Prerequisites:		Knowledge and skills in mathematics at the basic high school level.						
II. LEARNING OBJECTIVES								
Learning objectives:								
Objective 1: A survey of methods in abstract algebra, linear algebra and mathematical analysis that provide a framework for formulating and investigating problems arising in computer science. Objective 2: Identifying, describing, and interpreting concepts occurring in computer science issues. Objective 3: Supporting design processes and their implementation.								
IV. PROGRAMME CONTENT								
Content of the programme (topics of classes, presented with a breakdown into individual forms of classes with the indication of the number of hours needed for their realization)								
Lecture								
Code	Course topics in theory							Number of hours
L01	Sequences of numbers. The limit of a sequence.							1
L02	Series of numbers and criteria of their convergence.							1
L03	Limits and continuity of functions.							1
L04	Elementary functions and their properties.							1
L05	Derivative of a function and techniques of its calculation.							2
L06	Applications of differential calculus.							2
L08	Matrices and operations on them. Determinants. Inverse matrix.							2
L09	Systems of linear equations and methods of solving them.							2
L10	Complex numbers and their properties.							1
L11	Complex polynomials. Complex rational functions.							2
Classes								
Code	Course topics in practice							Number of hours
C01	Sequences of numbers. The limit of a sequence.							1
C02	Series of numbers and criteria of their convergence.							1
C03	Limits and continuity of functions.							1
C04	Elementary functions and their properties.							1
C05	Derivative of a function and techniques of its calculation.							2
C06	Applications of differential calculus.							2
C08	Matrices and operations on them. Determinants. Inverse matrix.							2
C09	Systems of linear equations and methods of solving them.							2
C10	Complex numbers and their properties.							1

C11	Complex polynomials. Complex rational functions.	2
VIII. RECOMMENDED LITERATURE		
Basic sources: <ol style="list-style-type: none"> 1. Z. Michna, <i>Mathematics</i>, Publishing House of Wrocław University of Economics, 2008. 2. T. S. Apostol, <i>Calculus, Volume 1: One-Variable Calculus with an Introduction to Linear Algebra</i>, Wiley, 2007. 3. T. Andreescu, D. Andrica, <i>Complex numbers from A to ... Z</i>, Birkhauser, 2014. 		
Additional sources: <ol style="list-style-type: none"> 1. S. Axler, <i>Linear Algebra Done Right</i>, Springer: https://linear.axler.net/LADR4e.pdf. 2. OpenStax, <i>Calculus, Volume 1</i>, OpenStax / Open Textbook Library: https://open.umn.edu/opentextbooks/textbooks/252 		