Syllabus

Course Description

Course Title	Analysis
Course Code	76242
Course Title Additional	
Scientific-Disciplinary Sector	MAT/05
Language	English
Degree Course	Bachelor in Computer Science
Other Degree Courses (Loaned)	
Lecturers	dr. Ognjen Savkovic, Ognjen.Savkovic@unibz.it https://www.unibz.it/en/faculties/engineering/academic-staff/person/32015
Teaching Assistant	
Semester	Second semester
Course Year/s	1
CP	6
Teaching Hours	40
Lab Hours	20
Individual Study Hours	90
Planned Office Hours	
Contents Summary	This course belongs to the type "Attività formative di base" and the subject area is "Matematica-Fisica". The aim of this course is to introduce fundamental mathematical concepts that support the study of computer science. In particular, it covers sequences and series, univariate functions, derivatives, differentials and Taylor's theorem, the Riemann integral, logarithmic and exponential functions, and normed vector spaces.
Course Topics	• Sequences and series • Univariate functions

	• Derivatives, differentials and Taylor Theorem • Riemann integral • Logarithmic and exponential functions • Limits of functions and continuity
Keywords	calculus, limits, series, derivates, integrals, logarithm and exponential function
Recommended Prerequisites	There are no prerequisites for this course.
Propaedeutic Courses	
Teaching Format	The course includes frontal lectures and exercises.
Mandatory Attendance	Generally, attendance is not compulsory, but non-attending students can contact the lecturer at the start of the course to agree on the modalities of the independent study.
Specific Educational Objectives and Learning Outcomes	Knowledge and Understanding - D1.1: Have a solid knowledge of mathematical analysis, algebra, numerical calculus, discrete mathematics and elementary notion of logic that are in support of computer science Applying knowledge and understanding - D2.1: Be able to use the tools of mathematics and logic to solve problems. Ability to make judgments - D3.2: Be able to work autonomously according to the own level of knowledge and understanding. Communication skills - D4.1: Be able to use one of the three languages English, Italian and German, and be able to use technical terms and communication appropriately. Learning skills - D5.1: Have developed learning capabilities to pursue further studies with a high degree of autonomy.
Specific Educational Objectives and Learning Outcomes (additional info.)	
Assessment	The written exam will include verification questions, transfer-of-knowledge questions, and exercises. The purpose of the

	assessment is to evaluate the extent to which students have achieved the learning outcomes related to knowledge and understanding, the application of knowledge, and the ability to make informed judgments. These criteria apply equally to both attending and non-attending students.
Evaluation Criteria	The final written exam accounts for 100% of the final grade and covers the entire course program. Exam questions will be evaluated based on correctness, clarity, the quality of argumentation, and problem-solving ability. Students are offered a written midterm exam (held midway through the semester), which covers material from the first half of the course (to be specified in detail during the semester). The midterm accounts for 50% of the final exam grade. Students who fail the midterm or are unable to take it for any reason can take the final written exam instead. The midterm result is valid for three exam sessions.
Required Readings	John M. Howie. Real Analysis. Springer, corrected edition, 2012.
Supplementary Readings	Robert A. Adams. Calculus: A Complete Course. Robert A. Adams, Toronto, 8th edition, January 2013. ISBN 978-0-321-78107-9.
Further Information	If the use of specific software is required, it will be communicated during class by the lecturer.
Sustainable Development Goals (SDGs)	Quality education