SYLLABUS
COURSE DESCRIPTION – ACADEMIC YEAR 2022/2023

COURSE TITLE	**Discrete Mathematics**
COURSE CODE	76239
SCIENTIFIC SECTOR	MAT/01
DEGREE	Bachelor in Computer Science
SEMESTER	1st
YEAR	1st
CREDITS	6

TOTAL LECTURING HOURS	40
TOTAL LAB HOURS	20
ATTENDANCE	Attendance is not compulsory but recommended. Non-attending students must contact the lecturer at the start of the course to agree on the modalities of the independent study.
PREREQUISITES	None.
COURSE PAGE	https://ole.unibz.it/

SPECIFIC EDUCATIONAL OBJECTIVES	Type of course: "di base" Scientific area: "matematico fisica" The aim of this course is to introduce students to basic topics in discrete mathematics. An overview of proof methods and their relation to logic will be given. The induction principle is introduced in a few variants, and methods to analyse and describe the main properties of relations, functions, graphs and trees will be studied. We will also introduce the basic principles governing the mathematical definitions of infinite sets and of countability.

LECTURER	Nicolas Troquard
SCIENTIFIC SECTOR OF THE LECTURER	INF/01
TEACHING LANGUAGE	**English**

OFFICE HOURS	Thursdays, 11:00 - 13:00. Arrange beforehand by email, nicolas.troquard@unibz.it. Office POS 3.02, Faculty of CS, POS Building, Piazza Domenicani 3
TEACHING ASSISTANT	Ognjen Savkovic
OFFICE HOURS	Fridays, 14:00 - 16:00. Arrange beforehand by email, ognjen.savkovic@unibz.it. Office POS 2.02, Faculty of CS, POS Building, Piazza Domenicani 3
List of topics covered	• Elements of logic, propositions and quantifiers, methods of mathematical proof • Numbers and basic number theory • Set Theory, Russell Paradox and Halting Problem • Functions, infinite cardinalities and countability • Relations, orders, equivalence classes • Graphs and trees
TEACHING FORMAT	Frontal lectures; Exercises in Lab.

LEARNING OUTCOMES	**Knowledge and understanding** • Have a solid knowledge of mathematical analysis, algebra, numerical calculus, discrete mathematics and elementary logic that are in support of computer science. **Applying knowledge and understanding** • Be able to use the tools of mathematics to solve problems. **Making judgments** • Be able to work autonomously according to the own level of knowledge and understanding. **Communication skills** • 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** • Have developed learning capabilities to pursue further studies with a high degree of autonomy.

ASSESSMENT	Written exam. The written exam consists of verification questions, transfer of knowledge questions and exercises. The learning outcomes related to knowledge and understanding, applying knowledge and understanding and those related to the student's ability to learn and apply the acquired learning skills, will be assessed.

ASSESSMENT LANGUAGE	**English**
EVALUATION CRITERIA AND CRITERIA FOR AWARDING MARKS	Final written exam counting 100% for the evaluation and covering the full program of the course. Written exam questions will be evaluated in terms of correctness, clarity, quality of argumentation, and problem-solving ability.

REQUIRED READINGS	Susanna Epp: Discrete Mathematics with Applications, Cengage Learning, 4th edition. [Main book]
SUPPLEMENTARY READINGS	Kenneth Rosen: Discrete Mathematics and its Applications, McGraw-Hill, 7th edition. [Auxiliary book]
SOFTWARE USED	