Bachelor of Science (BSc) in Physical Sciences

Discrete Mathematics

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Discrete Mathematics

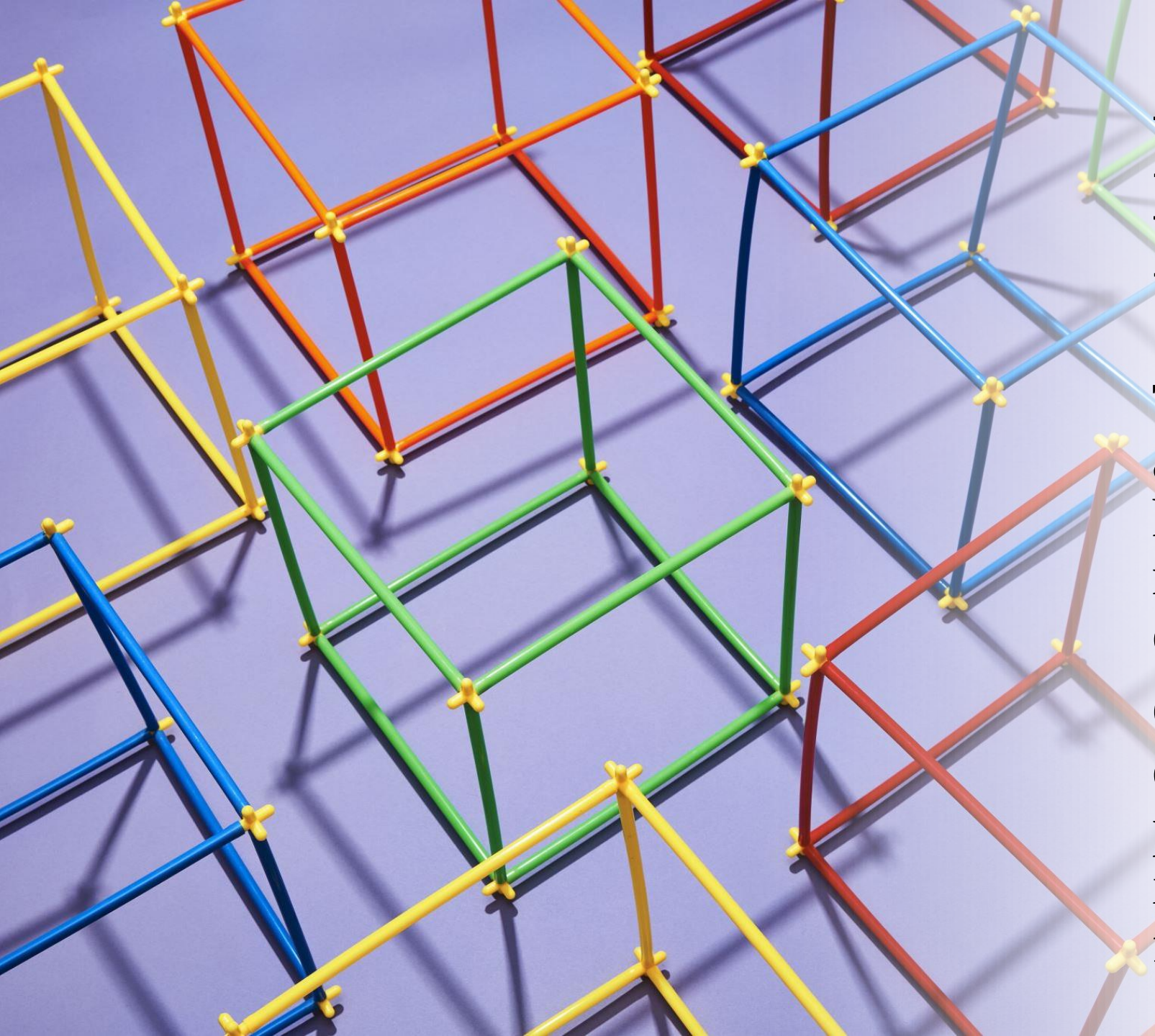
Discrete mathematics is a branch of mathematics dealing with distinct, separate values and structures.

It represents a diverse set of topics that often involve integers, graphs, logic, and mathematical reasoning.

Logic and Propositional Calculus

Discrete mathematics explores formal logic, including propositional and first-order logic.

It involves the study of logical operators, truth tables, and the construction of valid arguments.



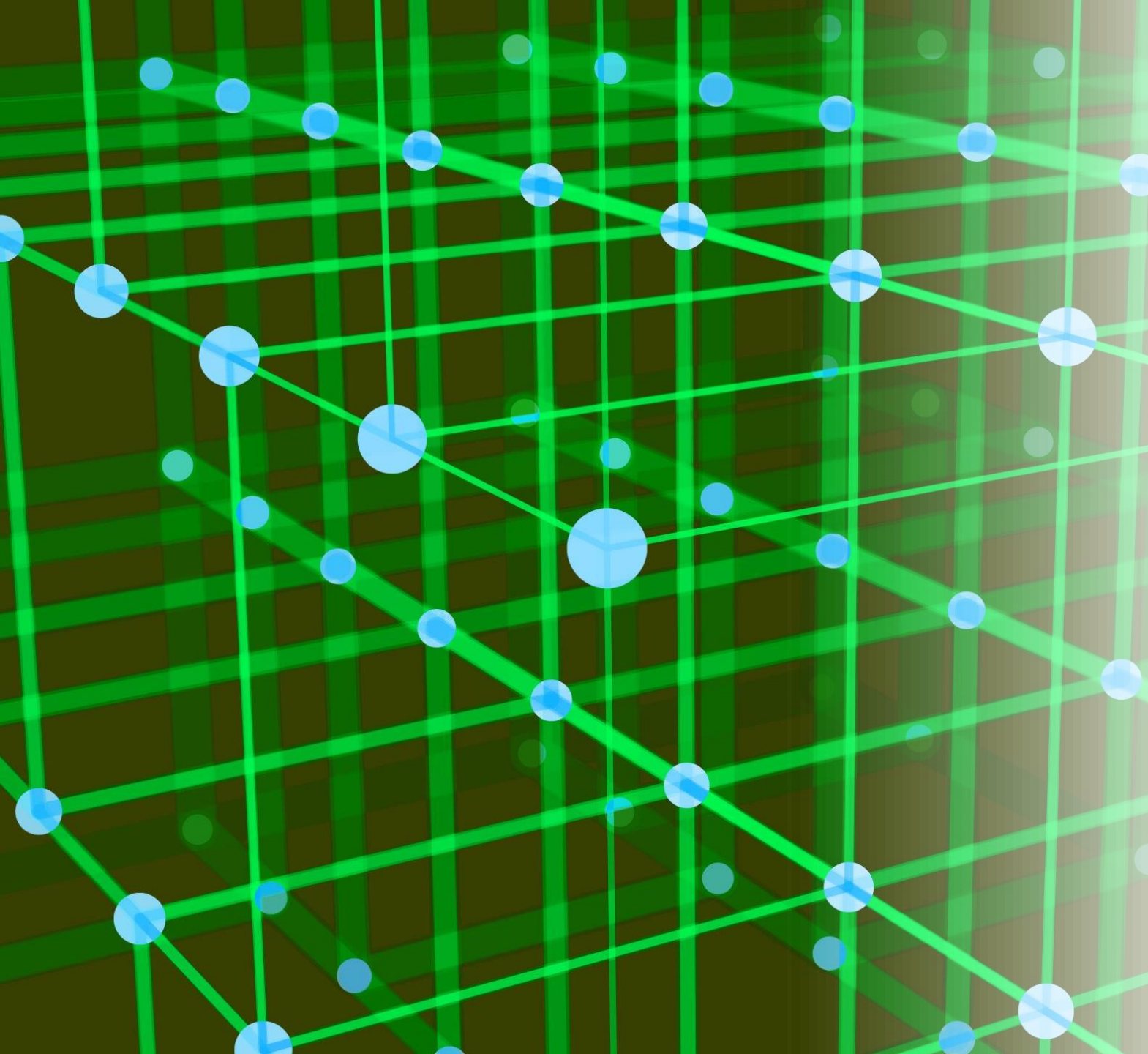
Relations and Functions

The study of relations and functions analyzes how elements in sets are related or mapped to each other.

Concepts include equivalence relations, partial orders, and injective/surjective functions.

Set Theory

Set theory is a foundational concept in discrete mathematics, examining sets, subsets, and operations like union and intersection. It provides a basis for understanding mathematical structures.



Graph Theory

Graph theory studies networks of interconnected nodes and edges.

It includes concepts like **paths, cycles,** and **graph algorithms**, making it applicable in various fields, including computer science.

Number Theory

Number theory focuses on the properties and relationships of integers.

Topics include

prime numbers

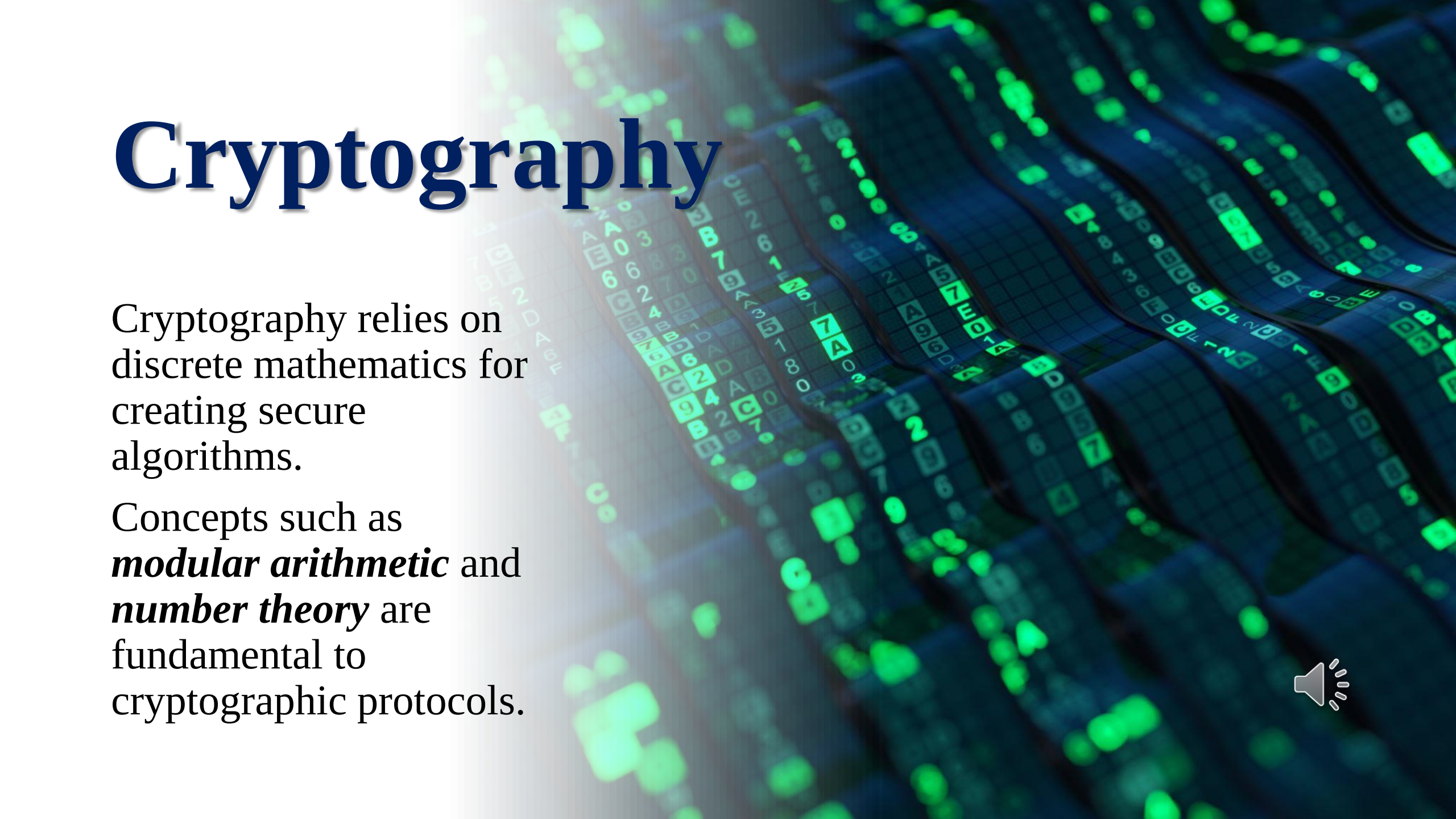
divisibility

modular arithmetic

Cryptography

Cryptography relies on discrete mathematics for creating secure algorithms.

Concepts such as ***modular arithmetic*** and ***number theory*** are fundamental to cryptographic protocols.



Covered Points:

- Definition of Discrete Mathematics
- Logic and Propositional Calculus
- Relations and Functions
- Set Theory
- Graph Theory
- Number Theory
- Cryptography

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