



# Bachelor's Program in Applied Mathematics and Computer Science for Engineering

## Description

Modern engineering increasingly depends on mathematical modeling, computational methods, and intelligent software systems. From artificial intelligence and data science to industrial automation, digital technologies, and scientific computing, engineers require a solid foundation in mathematics together with advanced programming and analytical skills to address today's technological challenges.

The **Bachelor's Program in Applied Mathematics and Computer Science for Engineering** provides students with a rigorous education that combines mathematics, computer science, and engineering applications. The program develops both theoretical understanding and practical competencies, preparing graduates to design computational solutions, analyze complex systems, and apply mathematical methods to real-world engineering problems.

Students acquire a strong background in calculus, linear algebra, probability, optimization, numerical methods, algorithms, programming, and data structures, while gaining hands-on experience in software development, scientific computing, artificial intelligence, and data analysis. Throughout the program, mathematical concepts are continuously connected to practical engineering applications, enabling graduates to bridge the gap between theory and technology.

## Why Choose This Program?

The program offers a unique interdisciplinary curriculum that integrates mathematics, computer science, and engineering sciences within a modern learning environment. Students benefit from small study groups, close interaction with faculty members, and opportunities to participate in research projects from the early years of study.

Graduates develop the analytical thinking, computational skills, and problem-solving abilities that are increasingly sought after across engineering, information technology, finance, research, and industry.

## Competencies Acquired

Upon graduation, students will be able to:



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- Develop mathematical models for engineering, scientific, and industrial applications.
- Design, implement, and evaluate software solutions using modern programming languages and computational tools.
- Apply numerical methods and scientific computing techniques to solve complex engineering problems.
- Analyze, process, and visualize data using statistical and computational methods.
- Develop algorithms for optimization, simulation, and decision support.
- Apply principles of artificial intelligence and machine learning to practical applications.
- Design and manage database systems and data-driven applications.
- Integrate mathematical reasoning with computational methods to solve interdisciplinary problems.
- Work effectively in multidisciplinary teams and communicate technical solutions to diverse audiences.

## Curriculum Highlights

The curriculum includes courses in:

- Mathematical Analysis
- Linear Algebra and Analytical Geometry
- Probability and Statistics
- Differential Equations
- Numerical Methods
- Mathematical Modeling
- Programming Fundamentals
- Object-Oriented Programming
- Data Structures and Algorithms
- Database Systems
- Artificial Intelligence
- Machine Learning
- Scientific Computing
- Optimization Methods
- Computer Networks
- Software Engineering



## Practical Training

The program places strong emphasis on practical experience through:

- Programming laboratories and computational projects
- Mathematical modeling and simulation
- Software development projects
- Team-based engineering assignments
- Internships with industrial and research partners
- Undergraduate research opportunities

Students become proficient in widely used programming languages and software environments such as Python, C/C++, MATLAB, SQL, and modern software development tools.

## Career Opportunities

Graduates are well prepared for careers in a wide range of sectors where mathematical and computational expertise is essential, including:

- Software Engineering
- Data Science and Data Analytics
- Artificial Intelligence and Machine Learning
- Scientific Computing
- Systems Analysis
- Business Intelligence
- Financial Technology (FinTech)
- Engineering Design and Simulation
- Operations Research
- Cybersecurity
- Research and Development

The program also provides an excellent foundation for graduate studies in applied mathematics, computer science, artificial intelligence, data science, engineering, operations research, and related disciplines.

## Program Highlights

- Interdisciplinary curriculum combining mathematics, computer science, and engineering.



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- Strong emphasis on programming, algorithms, and computational thinking.
- Integration of artificial intelligence, data science, and scientific computing.
- Extensive practical training through laboratories, projects, and internships.
- Close interaction with experienced faculty members actively involved in research.
- Excellent preparation for both industry careers and master's studies in Romania and abroad.

### Additional Information

- **Language of instruction:** Romanian
- **Duration:** 4 years (240 ECTS)
- **Degree awarded:** Bachelor of Science (B.Sc.) in Applied Engineering Sciences