

## Specialized Subject “Mathematical Informatics” Purpose of the Entrance Examination

### **Purpose of the Entrance Examination (Master's Program):**

In the Department of Mathematical Informatics, our goal is to formulate real-world problems into mathematical models and develop mathematical techniques and methodologies to solve them. Such research activities require more than just the skill to understand mathematical concepts and perform accurate calculations or proofs. They also demand the insight and critical thinking necessary to identify and formalize the underlying mathematical models of various phenomena, as well as the ability to design algorithms for problem-solving using computers.

Accordingly, the examination for the specialized subject "Mathematical Informatics (Master's Program)" was designed to assess the fundamental proficiency required for the broad range of abilities mentioned above, with questions covering fields such as (i) Linear Algebra, (ii) Differential Equations, (iii) Optimization, (iv) Probability and Statistics, and (v) Algorithms.

### **Purpose of the Entrance Examination (Doctor's Program):**

In the Department of Mathematical Informatics, our goal is to formulate real-world problems into mathematical models and develop mathematical techniques and methodologies to solve them. Such research activities require more than just the skill to understand mathematical concepts and perform accurate calculations or proofs. They also demand the insight and critical thinking necessary to identify and formalize the underlying mathematical models of various phenomena, as well as the ability to design algorithms for problem-solving using computers.

The examination questions for the specialized subject "Mathematical Informatics (Doctoral Program)" were intended to evaluate these capabilities by measuring the applicant's ability to describe and explain advanced topics within various specialized fields related to mathematical informatics.