(A) GENERAL DATA

Title	Doctoral School in Mathematics
Degree	Phd in Mathematics
Type	Degree program
Level	Doctoral level
Accreditation number	OH-FRKP/406-3/2007.
Faculty	Faculty of Science
Institute	Institute of Mathematics
Department(s)	Doctoral School of Mathematics
Language	English
Duration	4 + 4 semesters
ECTS credits	240
Place	ELTE Lágymányos Campus
Minimum number of new students	1
Maximum number of new students	5

(B) PROGRAM CONTENT

Short description:

The Mathematics PhD School of the Eötvös Loránd University was founded in 2001. The topics covered by the PhD Program comprise most of pure mathematics, including also computer science, combinatorial optimization, statistical and mathematical physics, as well as most of applied mathematics including the full spectrum of operations research and statistics. A program in didactics of mathematics is also available. The program is research oriented: apart from attending specialized courses, our students usually start their research work by the end of the first year. Thus by the end of the program most of them already obtain results which are published (or accepted for publication) at internationally renowned journals. At the end of each year the students report about their research progress. By the end of the second year of studies the students must pass a comprehensive examination.

Strength of program:

The Institute of Mathematics employs close to one hundred full or part time professors working in various fields of mathematics. The advisors of the PhD School are internationally renowned experts of their fields. We collaborate with several research institutes and universities both in and outside Hungary, and regularly have visitors from abroad doing research or giving courses. Of particular interest is the fact that many researchers in the internationally renowned Hungarian school of combinatorics have started their career at our university and many of them still have position at the Institute of Mathematics. For example the Wolf Prize and Kyoto Prize winner Prof. László Lovász is a professor at our university. Recent Abel prize winner, Prof. Endre Szemerédi is also a graduate of our school. But one could also recall the Ostrowski Prize of Prof. Miklós Laczkovich (professor of our university), the Gödel Prize of Prof. László Babai (former professor), the Coxeter Prize of Prof. Balázs Szegedy (a graduate of our university) etc.

(C) STRUCTURE

To fulfill the program requirements the candidate has to do course related work, report regularly on his/her research, pass a comprehensive examination and write and defend a thesis.

The courses can be chosen from the following topics, depending on the research interest of the candidate:

Algebra (Group-theory)

Algebra (Ring Theory)

Algebra (Universal Algebra)

Analysis (Complex Functions)

Analysis (Differential Equations)

Analysis (Functional Analysis)

Analysis (Real Functions)

Applications of Stochastic Processes

Approximation Algorithms

Behavior of Independent Random Variables

Boundary Value Problems

Calculus of Probability

Combinatorial Algorithms

Combinatorial Optimization

Combinatorial Optimization Structures

Continuous Optimization

Decision Theory

Discrete Mathematics

Discrete Optimization and its Applications

Dynamic Programming

Dynamic Systems and their Applications

Eigenvalue Problems

Functional Analysis

Geometry (Differential Geometry)

Geometry (Discrete, Combinatorial, Finite and Convex Geometry)

Geometry (Topology)

Independent Increment and Markov Processes

Integer-valued Programming

Integral Equations

Linear Programming

Mass-service Theory

Mathematical Models and their Applications

Mathematical Physics

Mathematical Statistics

Multidimensional Methods

Nonlinear Programming

Nonparametric Methods

Number Theory

Numerical Algebra

Numerical Solution of Elliptic Problems

Numerical Solution of Linear Systems

Numerical Solution of Nonlinear Systems

Numerical Stability Theory

Numerical Treatment of Initial Value Problems

Numerical Treatment of Least Squares Problems

Optimization of Stochastic Processes

Ordinary Differential Equations

Parallel Algorithms

Partial Differential Equations

Polyhedron Combinatorics

Reliability Theory

Scheduling Theory and Production Management

Simulation

Special Numerical Solutions of Equations Important in Applications (Convection-diffusion, Navier-Stokes, Maxwell Equations)

Stability- and Bifurcation Theory

Statistical Analysis of Time Series

Stochastic (Calculus of Probability)

Stochastic (Stochastic Processes)

Stochastic Processes

Stochastic Programming

Storage Theory

Theory of Linear Partial Differential Equations

Theory of Sets and Mathematical Logic

Time Dependent Partial Differential Equations

(D) CAREER

Career opportunities:

While many of our former students obtain postdoctoral positions throughout the world, a large portion of them gets tenure or tenure track positions at universities or research institutes. Some of our students will pursue their research career in the non-academic environment of large international research institutions, tied to high-tech development or to the economic or financial world.

Job examples:

- university professor
- research mathematician in a research institute
- system analyst in a financial institution (bank, investment, insurance)
- high tech industry
- teacher of mathematics

(E) ADMISSIONSFOR THE ACADEMIC YEAR 2017/2018

TUITION AND OTHER FEES

	EU/EEA students	non-EU/EEA students
Tuition fee/semester	1910 (EUR)*	2500 – 4500 (EUR) depending on the research topic
Application fee	160 (EUR)	160 (EUR)
Registration fee	60 (EUR)	60 (EUR)

* Reduced fee: 350 EUR, if you research not in the University teritory.

Offered for the academic year 2017/2018?	**YES**
Deadline for applications – September intake	**30 APRIL 2017**
Is there a February intake?	**NO**

Admission requirements–Language requirements:
A master's degree in mathematics (or in a related field) is a requirement. A reasonable command of English language is also needed (most international certificates will be accepted).

Criteria for ranking at the admission procedure will include:

1. previous university achievement (examinations, comprehensive examinations, qualification of degree),
2. achievements related to previous research work (awards obtained in students' academic circles, publications in the particular professional area),
3. feasibility of the research program.

Admission requirements – Documents to submit with application:

- ✓ Bachelor-level degree
- ✓ Master-level degree
- ✓ Transcript of records
- ✓ CV
- ✓ Motivation letter
- ✓ Research plan
- ✓ Letter of recommendation

- ✓ Application form
- ✓ Copy of the main pages of the passport (needs to be valid)
- ✓ Passport photo
- ✓ Copy of application fee transfer
- ✓ Other: English language certificate

Application procedure:

Besides filling out the online registration form at https://registration.elte.hu,

and application form, which you can download at http://ttk.elte.hu/node/820.

The applicant should also send the saved version of the form to doktoranduszugyek@ttk.elte.hu and to mathinst@cs.elte.hu together with the following documents:

(a) degree certificates (BSc, MSc), together with English (or Hungarian) translation;
(b) transcript of records (BSc, MSc), together with English (or Hungarian) translation;
(c) CV, containing data about past professional activities (education, employment history), awards, list of publications etc.;
(d) motivation letter, describing main lines of interest within mathematics;
(e) research plan (listing one or more potential research topics);
(f) 2 letters of recommendation by people qualified to judge the applicants professional potentials and/or achievements;
(g) copy of the main page of the passport, together with a passport photo;
(h) copy of the transfer of application fee;
(i) English language certificate, proving reasonable command of the language

Procedure of the entrance examination:

A written test will be sent (via E-mail) to the applicant, covering basic fields of mathematics. In a limited amount of time the applicant will have to send back the solutions. In some cases a skype interview may follow.

(F) CONTACT

Doctoral School leader

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