Eötvös Loránd University

FACULTY OF SCIENCE

Short Guide

Publisher: Mr. György MICHALETZKY, Dean of the Faculty of Science of Eötvös Loránd University

4nd reviewed edition
Compilation finished on 17th Januray, 2011

Printed: *Fischerman Ltd.*
Védgát st. 43. Budapest 1211

Compilation finished on 19th January, 2009

Editor's Office
Editor: Mr. József NEMES-NAGY, Vice-dean, Scientific and International Affairs
Department of Scientific and International Affairs
Address: Pázmány Péter sétány 1/A, Budapest H-1117

Collaborators: Ms. Andrea KOMÁROMY ELCHLINGER, Mr. Henrik J. KULLA, Mr. Tamás LENGYEL, Mr. Péter NYITRAI, Ms. Ildikó KÖRNYEI RÉVI

E-mail: teo@teo.elte.hu

This publication is also available on the Web with links to many other sites:
http://ttk.elte.hu, http://teo.elte.hu

CONTENTS

FOREWORD

Eötvös Loránd University (ELTE) is the oldest and, with its 8 faculties and more than 30 000 students, the biggest university in Hungary. The broad range and high quality of its education, along with its research capacity, place ELTE among the leading academic institutions of the country. The past decade brought remarkable changes in the life of the University. Its dynamic development has resulted in integrating the formerly scattered institutions, buildings and research facilities.

The Faculty of Science on its new campus in South Buda has 40 departments grouped into five Institutes. These cover disciplines in biology, chemistry, earth science, environmental sciences, mathematics and physics. There are about 5 500 full-time graduate, 400 PhD students, and 500 academic staff members. Besides a comprehensive educational curriculum, there is a vigorous program of research in all departments. The Faculty itself is thus a major national scientific resource.

This booklet is an introduction to the Faculty of Science, covering the educational and scientific activities in each part of the Faculty, and providing an up-to-date list of relevant contact names and addresses.

Changes are taking place throughout all areas of life in Hungary at present. Adjusting our work to take account of the new circumstances presents a major challenge, and a vital component of development in the near future will involve working with institutions and individuals beyond our borders, first of all in European Union countries. Whether you are an academic wishing to take part in scientific or educational exchange, a student interested in one of our English- (or other) language courses, or are simply curious, we look forward to receiving your inquires.

Budapest, 19th January, 2009

György MICHALETZKY
Professor of Mathematics
Dean

CENTURIES OF THE UNIVERSITY

The University was founded by *Cardinal Péter PÁZMÁNY* (1570-1637) as a Catholic institution on May 12, 1635. Its original location was in northwest Hungary, Nagyszombat (now Trnava in Slovakia), since large areas of Hungary were at that time the subject of continual dispute with the Ottoman Empire.

The original faculties were Theology and Philosophy, where teaching began in the academic year of 1635-1636. Though the University had a strong Catholic character, the curriculum from the very beginning included mathematics and natural sciences, like physics and cartography. 1667 saw the foundation of the Faculty of Law, and Medicine followed more than a century later, in 1769. Thus established with the classical European university structure of four faculties, state control was introduced in the same year by *Empress Maria Theresia* (1717-1780), who gave it the new name of the Royal Hungarian University.

The Turks were expelled from Hungary at the turn of the 17th-18th centuries and Buda slowly regained its role as capital of the country. The University was moved to Buda in 1777. In the next decades its faculties were distributed among several buildings in Buda and Pest. The prosperity of the second half of the 19th century made it possible to build the campus in Museum Ring, which is now the location of several departments of the Faculty of Arts. In addition, the ever-growing University acquired new buildings – more than 100 by now – spread out all over Budapest.

The original language of teaching was Latin, and it was only about two hundred years ago that the Department of Hungarian Language was created. Hungarian became the official language of undergraduate teaching in 1861.

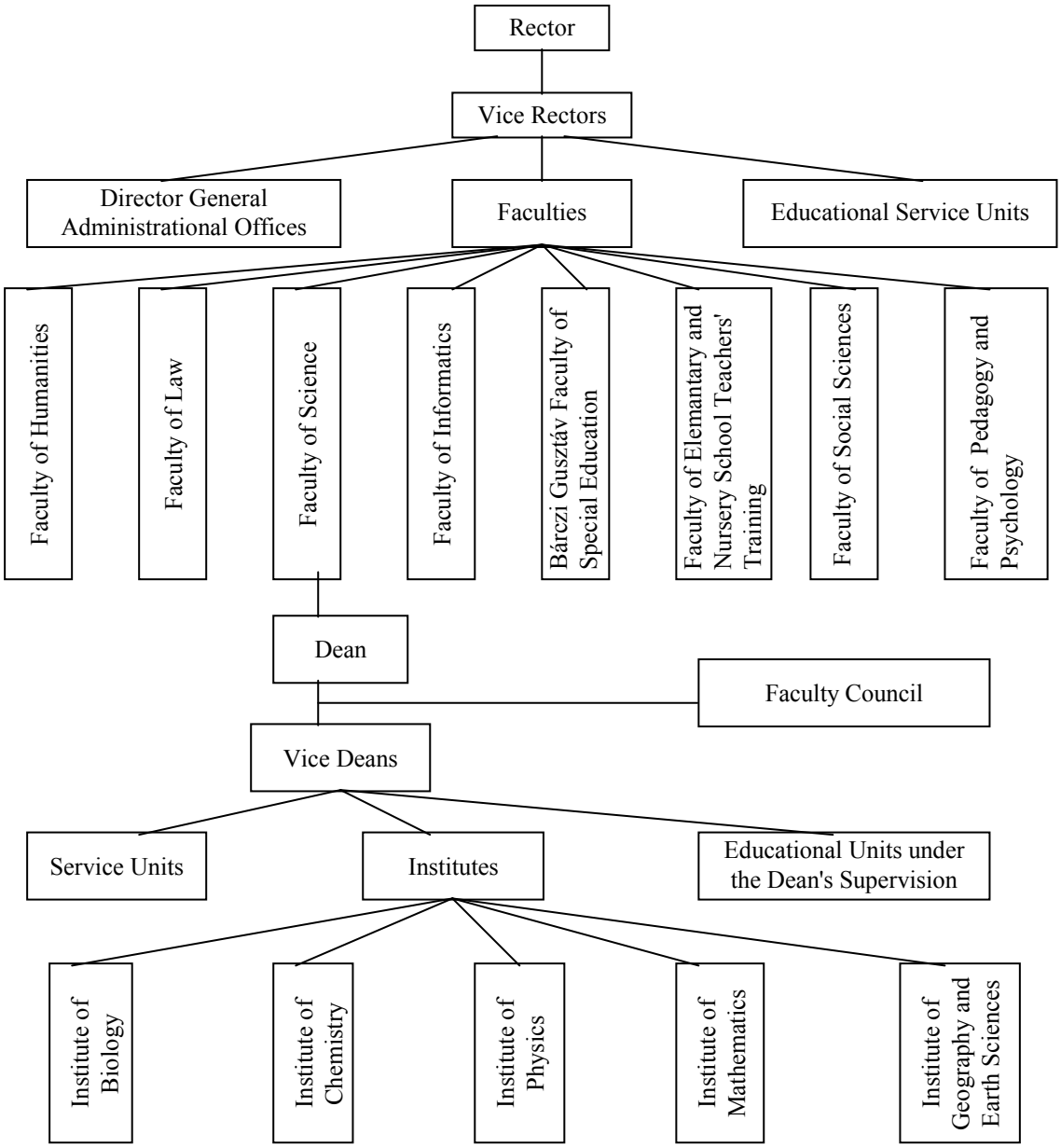
The structure of the university remained unaltered for almost two hundred years, up to 1950, when significant changes were brought about by the communist takeover. The faculty of Theology was expelled from the University on ideological grounds, and the Faculty of Medicine became the independent Semmelweis Medical University. The Faculty of Philosophy and Arts was divided into the Faculties of Science and Arts. A recent change was the opening of a new campus in the South Buda. In 1950 the University was re-named after *Baron Loránd EÖTVÖS* (1848-1919), a Professor of Physics of considerable reputation (experimental evidence for the equivalence of gravitational and inertial mass) and an eminent statesman.

The Eötvös Memorial Day as well as the Pázmány Memorial Day, held in the first half of May serve as the dates for distinguished lectures and official awards presented by the Rector of the University and the Dean of the Faculty.

PRIDES OF OUR UNIVERSITY IN THE FIELD OF NATURAL SCIENCES

Name	Field of Science	Prize
Fülöp LÉNÁRD (1862-1947)	Physics	Nobel Prize 1905
György HEVESY (1885-1966)	Chemistry	Nobel Prize 1943
Albert SZENT-GYÖRGYI (1893-1986)	Biochemistry	Nobel Prize 1937
György BÉKÉSY (1899-1972)	Biophysics	Nobel Prize 1961
Pál ERDŐS (1913-1996)	Mathematics	Wolf Prize 1983
László LOVÁSZ (1948-)	Mathematics	Wolf Prize 1999

ORGANIZATION OF THE UNIVERSITY AND THE FACULTY



About the Faculty

The Faculty of Science is one of the largest faculties of Eötvös Loránd University. It has 44 departments, organized in five institutes.These are located in two large buildings on the new campus of the University on the scenic banks of the Danube. The number of undergraduate, graduate and postgraduate students, who participate in the different programs, is close to 7 000. The academic staff is 600 teachers and researchers. The Faculty puts emphasis on international contacts with European universities for cooperation both in teaching and research through the exchange of students and lecturers. Therefore the Faculty has joined UNICA, IAU, EAIE, EUROBIO, CEEPUS groups and also participates in TEMPUS and ERASMUS programs to ensure mobility in higher education. Many staff members also have informal international contacts through their research activity that contribute to an exchange of MSc and PhD students.

Employees of the Faculty	Full time	Part time	Sum total
Lecturers			
Professors	78	16	94
Associate professors	148	16	164
Assistant professors	97	8	105
Assistant lecturers	61	2	63
Academic Degrees and Titles of Full Time Lecturers			
Hungarian Academy of Sciences - full members	9		9
Hungarian Academy of Sciences - corresponding members	4		4
Doctors of Hungarian Acadamy of Sciences (DSc)	73		73
Candidate (CSc)	73		73
PhD	162		162
dr. univ.	20		20
Researchers			
Researcher professor	1		1
Scientific advisor	2	1	3
Head researcher	10	6	16
Associate researcher	14	3	17
Assistant researcher	48	4	52
Non-Lecturers/Researchers			
Staff	193	24	217
Sum total	**652**	**80**	**732**

On 15th October 2008

Conditions of studying

Facilities: Numerous modern lecture halls and seminar rooms of the eight institutes and well-equipped laboratories of the department ensure excellent conditions for teaching. (To take a short virtual tour on the faculty, please follow this link: http://ttk.elte.hu/ttkenglish/virtual_tour/eltetour.html)

Libraries: There are the library of the Faculty of Science" and ten other large collections on the campus of the Faculty of Science, which are specialized to different fields of science. Students are free to use these and also the volumes in the other libraries of the University, including the central library of Eötvös Loránd University, as well as the smaller libraries of the different departments.

Photocopying and computer centres with access to the Internet are available for students. Each registered student is entitled to an e-mail account.

Sport facilities: The University has a wide range of sport facilities including swimming pools, various sports grounds, tennis courts and running tracks.

Student organization: The interest of students is represented by the Student Union. Their activists are present in the decision-making bodies at faculty and university level. The Student Union arranges all kinds of cultural, sporting and leisure programs, and also organizes meetings for foreign students. All enrolled students are entitled to participate in these programs and associations. The Union operates a Student Office, which helps for free or reduced-rate obtaining international student card, finding apartment and private tutors, provides maps and tickets to theaters etc. The Foreign Affairs Group of the Union is for the help and arrangement of problems of foreign students.

To visit the page snapshots of the life of students, please follow this link:
http://ttk.elte.hu/ttkenglish/virtual_tour/students.html

Student research

The vigorous research programs in all of the departments provide unlimited opportunity for students to participate. An „Undergraduate Research Program" provides a framework for voluntary student-teacher relationship in extracurricular research activity of students. A local, university forum for the display of the students' research work is a conference, held annually, while nation-wide conferences are organized biannually. On both events, students who performed the best are given awards.

Students of the Faculty	Full time		Part time	Sum total
	with scholarship	without scholarship		
Institute of Biology				
BSc in Biology	664	31		695
5 years programme: Biologist	207	135		342
5 years programme: Biology teacher	86	82	40	208
postgraduate degree: Human-ecologist			31	31
postgraduate degree: Microbiologist			38	38
postgraduate degree: Zoologist			19	19
PhD programmes (PhD School of Biology)	71	62		133
Institute of Chemistry				
BSc in Chemistry	260	7		267
5 years programme: Chemist	87	51		138
5 years programme: Chemist informatician	20	3		23
5 years programme: Chemistry teacher	18	22	12	52
PhD programmes (PhD School of Chemistry)	32	48		80
Institute of Geography and Earth Sciences				
BSc in Geography	374	17		391
BSc in Earth Science	406	10		416
5 years programme: Geographer	105	39		144
5 years programme: Geography teacher	24	47	22	93
5 years programme: Geologist	87	56		143
5 years programme: Geophysicist	10	3		13
5 years programme: Meteorologist	40	14		54
PhD programmes (PhD School of Earth Science)	38	37		75
Institute of Mathematics				
BSc in Mathematics	460	63		523
5 years programme: Mpplied mathematician	43	31		74
5 years programme: Mmathematics teacher	59	129	49	237
5 years programme: Mathematician	43	24		67
PhD programmes (PhD School of Mathematics)	26	5		31
Institute of Physics				
BSc in Physics	281	27		308
5 years programme: Astronomer	32	16	2	50
5 years programme: Engineer-physicist	6	1		7
5 years programme: Physicist	71	36		107
5 years programme: Physics informatician	15			15
5 years programme: Physics teacher	50	38	19	107
PhD programmes (PhD School of Physics)	33	43		76
Centre of Environmental Sciences				
BSc in Environmental Studies	338	16		354
5 years programme: Environmetal studies teacher	60	48		108
5 years programme: Environmetal science	133	35		168
PhD programmes (PhD School of Environmental Sciences)	16	16		32
Sum total	**4195**	**1192**	**232**	**5619**

On 15th October 2008

For a detailed list of the MSc courses in 2009, please have a look on the page of the relevant institute.

Lágymányos Campus

DEAN'S OFFICE

Secretariat of the Dean

Address: Pázmány Péter sétány 1/A, Budapest H-1117

Dean of the Faculty of Science: Mr. György MICHALETZKY, Professor of Mathematics

Head of the secretariat: Ms. Klára CSIBRA

Secretariat:
Building: Northern (1/A)
Room: 1.127
E-mail: csibraklara@caesar.elte.hu
Phone: +36 1 372 2545; +36 1 372 2500, Ext.: 6145
Fax: +36 1 372 2505

Departments

Department of Economic and Technical Affairs

Address: Pázmány Péter sétány 1/A, Budapest, Hungary H-1117
Homepage: http://ttkdh.elte.hu

Vice dean: Mr. László DÉTÁRI, Professor of Biology
E-mail: dhgmo@ludens.elte.hu

Head of the department: Ms. Erika PÁSZTOR
Building: Northern (1/A)
Room: 0.93
E-mail: erika15@elte.hu
Phone: +36 1 372 2653; +36 1 372 2500, Ext.: 6053
Fax: +36 1 372 2655

Secretariat:
Building: Northern (1/A)
Room: 0.94
Phone: +36 1 372 2647; +36 1 372 2500, Ext.: 6047
Fax: +36 1 372 2655

Department of Educational Affairs

Address: Pázmány Péter sétány 1/A, Budapest, Hungary H-1117
Homepage: http://ttkto.elte.hu

Vice dean: Mr. Zoltán HOMONNAY, Professor of Chemistry
E-mail: homonnay@ludens.elte.hu

Head of the department: Ms. Katalin KÖRMENDI
Building: Northern (1/A)
Room: 1.87
E-mail: cheni@ludens.elte.hu
Phone: +36 1 372 2568; +36 1 372 2500, Ext.: 6168
Fax: +36 1 372 2567

Secretariat:
Building: Northern (1/A)
Room: 1.85
Phone: +36 1 372 2596; +36 1 372 2500, Ext.: 6196
Fax: +36 1 372 2567

Incoming student administration
Contact person: Ms. Tímea REMLER KONCZ
Building: Northern (1/A)
Room: 1.84
E-mail: krtimea@ludens.elte.hu
Phone: +36 1 372 2584
Fax: +36 1 372 2567

Opening hours:
Monday and Friday: 10:00 - 12:00
Tuesday and Thursday: 13:30 - 15:30

Competences:
- Registration of incoming students in Register of Electronic Records – Erasmus, Ceepus, etc.
- Registration of regular students in Register of Electronic Records
- Managing of student registration books and courses in the Register of Electronic Records
- Giving out certifications and verifications

Department of Scientific and International Affairs

Address: Pázmány Péter sétány 1/A, Budapest, Hungary H-1117
Homepage: http://teo.elte.hu

Vice dean: Ms. Judit BARTHOLY, Professor of Meteorology
E-mail: dhteo@teo.elte.hu

Head of the department: Ms. Mária DEMETER
Building: Northern (1/A)
Room: 0.130
E-mail: demetermaria@teo.elte.hu
Phone: +36 1 372 2695; +36 1 372 2500, Ext.: 6095
Fax: +36 1 372 2604

Secretariat:
Building: Northern (1/A)
Room: 0.130
E-mail: teo@teo.elte.hu
Phone: +36 1 372 2695; +36 1 372 2500, Ext.: 6095
Fax: +36 1 372 2604

Competence of the department:
Coordination of PhD affairs
Since 1993 the Faculty of Science runs programmes for PhD degree in all branches of natural sciences. PhD programmes are organized into PhD schools (Biology, Chemistry, Earth Sciences, Environmental Sciences (since 2006), Mathematics and Physics) approved by the National Accreditation Board. The PhD programmes run parallel to those taught at the undergraduate level. The duration of studies is 3 years. During this period organized courses are given and after it to obtain a PhD degree the student has to take a final examination and submit a thesis, written on his or her special topic.

In the past three years about 580 postgraduate students took part in the PhD training, one-third of them as full-time fellowship holders. The high scientific standard of the PhD training is guaranteed by members of the Hungarian Academy of Sciences, Doctors of the Hungarian Academy of Sciences as well as many other PhD holders taking part in the program as lecturers, supervisors or school/program leaders. Many internationally acknowledged scientists and experts participate in the work of the PhD schools as lecturers of short courses and seminars.

The PhD training is open to foreign students who have an MSc or equivalent degree or diploma. Most programmes provide courses and supervision in English as well. Applications should be submitted to the Office of PhD Training (at the Office of Scientific and International Affairs) with documents on previous studies, plan of research, etc. Previous consultation with the program leader is recommended. The teaching fee is US$ 3000 per semester. Information can be obtained from Péter NYITRAI, the Secretary of the PhD School of the Faculty of Science.

There are 6 PhD schools and 26 programmes. See the schools, programmes, school and programme eleaders at the corresponding institute.

Habilitation

The word habilitation can be used to describe the qualification itself, or the process of earning that qualification. A succesful habilitation requires that the candidate be offecially given the venia legendi, Latin for „permission for lecturing", or the ius docendi, „right of teaching" a specific academic rank/post, associate professor, at Hungarian universities.

Habilitation is a qualification process measuring the candidate's scientific and teaching abilities according to the institutional regulations. Obtaining the doctorate degree (PhD) as a prerequisite. The habilitation requires the candidate to write a thesis based on independent scholarly accomplishments, and attach all documentation of scientific and teaching results and activities, reviewed by and defended in public lectures (habilitation and/or scientific) before an academic committee.

The habilitation is awarded after the succesful process by the Habilitation Committee of University. Those who have achieved habilitation can denote the fact by placing the abbreviation „Dr. habil" before their names.

International Affairs

In an era of increasing mobility and improving communications it is widely recognized that the development of international links has become vital to the continuing well-being of the University. The Faculty has always made great efforts to broaden and develop its international contacts with universities abroad.

Staff members have many informal contacts with colleagues in other countries. There are also official agreements for cooperation and exchange with a number of foreign institutions. Cooperation takes place in both teaching and research, in the exchange of students and lecturers.

The past year has seen a significant increase in links with western European universities. Our University has become member of the UNICA (Universities from Capitals of Europe), the IAU (International Association of Universities), the EAIE (European Association for International Education), the EUROBIO (European Association of University Departments and Faculties of Biology), the Coimbra Group, the Utrecht Network and the International Centre of Tübingen. A new way of official links in education and research is the CEEPUS (Central European Exchange Program for University Studies) program.

There are also formal contacts at faculty and departmental levels.

The TEMPUS scheme for cooperation and mobility in higher education between Central/Eastern Europe and the European Community has offered new possibilities to establish links with universities in the EC and to arrange student exchange. The Faculty has been keen to develop such links and a number of departments now have well-established Joint European Projects. Already a number of our undergraduates have taken the opportunity to spend months studying at a university in the EC. Courses undertaken in this way are assessed and approved and count fully towards the student's final degree.

Our University joined the Erasmus programme to obtain further chances to develop and modernise the structure of education. The implementation of Erasmus activities naturally motivate the university management at all levels to improve its strategy in accordance with the extension of European programmes.

Examination Day of the 40th International Chemistry Olympiad

INSTITUTES

Institute of Biology

Address: Pázmány Péter sétány 1/C, Budapest H-1117
Homepage: http://bio.elte.hu

Interim director: Mr. Károly MÁRIALIGETI, Associate Professor
E-mail: mariak@elte.hu

Secretariat:
Building: Southern (1/C)
Room: 6-205
Phone: +36 1 381 2177; +36 1 372 2500 Ext.: 8077
Fax: +36 1 381 2178

Departments

Department of Anatomy-, Cell- and Developmental Biology (http://anatomia.elte.hu)
Head of the department: Mr. Péter LŐW, Associate Professor
Department of Biochemistry (http://biokemia.elte.hu)
Head of the department: Mr. László NYITRAY, Associate Professor
Department of Biological Anthropology (http://ludens.elte.hu/~anthrop)
Head of the department: Ms. Éva BODZSÁR, Professor
Department of Physiology and Neurobiology (http://physiology.elte.hu)
Head of the department: Mr. László DÉTÁRI, Professor
Department of Ethology (http://etologia.aitia.ai)
Head of the department: Mr. Ádám MIKLÓSI, Professor
Department of Genetics (http://falco.elte.hu)
Head of the department: Mr. Tibor VELLAI, Associate Professor
Department of Immunology (http://immunologia.elte.hu)
Head of the department: Ms. Anna ERDEI, Professor
Department of Microbiology (http://mikrobiologia.elte.hu)
Head of the department: Mr. Károly MÁRIALIGETI, Associate Professor
Department of Plant Anatomy (http://novszerv.elte.hu)
Head of the department: Mr. Béla BÖDDI, Professor
Department of Plant Physiology and Molecular Plant Biology (http://www.novenyelettan.elte.hu)
Head of the department: Mr. Zoltán SZIGETI, Professor
Department of Plant Taxonomy and Ecology (http://ramet.elte.hu)
Head of the department: Mr. János PODANI, Professor
Department of Systematic Zoology and Ecology (http://systzool.elte.hu)
Head of the department: Mr. János TÖRÖK, Professor

Associated Units

Research Group of Theoretical Biology and Ecology of the Hungarian Academy of Sciences
Head of the group: Mr. Eörs SZATHMÁRY, Professor
Research Group of Immunology of the Hungarian Academy of Sciences
Head of the group: Ms. Anna ERDEI, Professor
Research Group of Zootaxonomy of the Hungarian Academy of Sciences
Head of the group: Ms. Klára DÓZSA-FARKAS, Professor

History

The Institute of Biology is one of the oldest ones at the Faculty. It was established in Nagyszombat in 1770 with the foundation of the Department of Chemistry and Botany at the Faculty of Medicine. Foundation of further units soon followed. (Natural History Department at the Faculty of Arts in 1774, Zoology and Mineralogy Department in 1784 and Anthropology in 1881). *Jakab WINTLER* and *Pál KITAIBEL* (the greatest Hungarian polymath ever) were prominent directors of the Department of Botany and the Botanical Garden of the University. Other distinguished lecturers here were *Vince Borbás* and *Lajos Simonkai*, in the 1800's, in this century *János TUZSON*, *Zoltán SZABÓ* and *Rezső SOÓ* (the prominent authority on Hungarian flora and vegetation). *Sándor SÁRKÁNY* founded the Department of Plant Anatomy and was its head for a long period. Plant Physiology was mastered by *Lajos JURÁNYI*, *Árpád PAÁL* (the pioneer of plant hormone research) *Nándor GIMESI*, *Tivadar MARGÓ*, *Géza ENTZ* and *Endre DUDICH* were

renowned zoology professors, while *Aurél TÖRÖK* and *Lajos BARTUCZ* earned their reputation as biological anthropologists.

Teaching

BSc programme: Biology

Specialisations: Biology, Teacher

MSc programmes: Biologist, Teacher

Biologist specialisations: Ecology; Evolutionary and Conservation Biology; Molecular, Immun- and Microbiology; Molecular Genetics; Cell- and Developmental Biology; Plant Biology; Neuro- and Human Biology

More information of BSc and MSc programmes: http://www.bio.elte.hu/engedu/index.htm

PhD School of Biology

School leader: Ms. Anna ERDEI, Professor

Programmes

Ecology, Conservation Biology and Systematics
Head of the programme: Mr. Eörs SZATHMÁRY, Professor

Ethology
Head of the programme: Mr. Ádám MIKLÓSI, Professor

Immunology
Head of the programme: Ms. Anna ERDEI, Professor

Experimental Plant Biology
Head of the programme: Mr. Zoltán SZIGETI, Professor

Classical and Molecular Genetics
Head of the programme: Mr. László OROSZ, Professor

Molecular Cell and Neurobiology
Head of the programme: Mr. Miklós SASS, Professor

Neuroscience and Humanbiology
Head of the programme: Mr. László DÉTÁRI, Professor

Structural Biochemistry
Head of the programme: Mr. László GRÁF, Professor

Zootaxonomy, Animal Ecology and Hydrobiology
Head of the programme: Mr. János TÖRÖK, Professor

Ecology, Conservation Biology and Taxonomy
Head of the programme: Mr. János PODANI, Professor

More information of PhD programmes: http://bio.elte.hu/engedu/PhD_program.htm

Research

The Institute conducts internationally renowned research in several fields of fundamental and applied biology.

Anatomy-, Cell- and Developmental Biology

Study of regulation of programmed cell death during the embryonal and postembryonal development; Pathobiology of cell death in neurondegenerative diseases and induced carcinomas; Fine structural, biochemical and genetic investigations of lysosomes and autophagic vacuoles involved in degradation of cellular organelles; Study of sorting and targeting signals on proteins secreted by polarized insect epithelia; Regulation of insect metamorphosis

Biochemistry

Genetic and protein engineering; Investigation of the mechanism of serine protease action; Structure–function studies on muscle and motor proteins

Biological Anthropology

Growth and maturation of Hungarian youth; Variations of human physique and body composition; Population genetic research

Section for Methodology in Biology Teaching

New methods in representation of biology teaching (stereoscopic photos, video films, multimedia systems); Environmental education in biology teaching; Relationship between mental and physical development; Physical activity and mental performance; Biological monitoring of freshwaters – Benthic macroinvertebrates; Water detecting of water insects; Case-building strategies of caddisfly larvae.

Physiology and Neurobiology

Psychophysiology of viscerosensory system; Neurophysiology and neurochemistry of sleep and emotion; Basic phenomena of memory and learning; Growth and differentiation of neural cells in tissue culture

Ethology
Main topics: Sociognitive behaviour in dogs; Behaviour genetic study of behaviour; Behavioural ecology of wild rabbits at Bugac and suskils at Bócsa; Social learning of food preference in rabbits; Theoretical models of evolutionary systems

Floristical and Phytosociological Studies in the Botanical Garden
Conservation of endemic and other endangered plants of Hungary; Applied dendrology; Acclimatization of subtropical ornamental plants

Genetics
Signalling cascades in C. elegans (ageing, cell size, morphogenesis, pattering differentiation), Phage 16-3 genomics and genetic switches, Biotechnological utilization of 16-3 genes (integrative recombination, regulatory elements), Genetics of industrial microorganisms (Bacilli, with emphasis on thiotemplate anti-biotics, mannan and cellulose utilization), Genetic polymorphism in plants, Plant Cytogenetics, Molecular genetics of deer, Genetics-coupled bioinformatics

Immunology
Structure and function of Fc receptors; Complement system; Regulation of B lymphocyte growth and differentiation; Antigen presentation; Development of monoclonal antibodies; T and B cell activation signal transduction

Microbiology
Comparative microbiological characterization of natural ecosystems; Investigation on the dynamics of mineralization processes; Studies on animal–microbe and plant–microbe interactions; Taxonomy of prokaryotes; Environmental microbiology

Plant Anatomy
Development, structure and function of plastids in different plants, organs and tissues grown under various conditions; Structural investigations in the early stages of embryogenesis: isolation of germ cells and artificial fertilization; Estabilishment of new endosymbioses between nitrogen fixing prokaryotes and plants; Plant secretory cells and tissues; Production and biotransformation of secondary products in callus and cell cultures of medicinal plants; Plant eustress, elicitation: symptoms and regulation; Mycology: biodiversity of ectomycorrhyzae, molecular taxonomy, medicinal fungi

Plant Physiology
Studies on the effect of light on the molecular structure of photosynthetic apparatus; Analysis of characteristics of cytoplasmic and r-RNA-s in etiolated wheat seedlings and during greening process; Fluorescence methods in characterisation of plant metabolism, stress physiological investigations; Physiological and morphological characterization of mycorrhiza - plant interactions; Investigation of heavy metal and microelement uptake and toxicity in plants; Structure, function studies of plant storage proteins; Wheat transformation for biotic and abiotic stress resistance and quality improvement

Plant Taxonomy and Ecology
Taxonomy of lower and flowering plants; Ecological and botanical aspects of nature conservation; Forest ecology; Plant ecophysiology; The history of biological modelling; Theoretical biology; Evolution theory, biological organization, and supraindividual organization; Numerical ecology, biostatistics; Ecology of clonal plants

Systematic Zoology and Ecology
Zootaxonomy, zoogeography, ecology, coenology and behavioural ecology, plant-animal interactions, ecological energetic, hydrobiology; Intensive zootaxonomic research concerning Nematoda, Oligochaeta and Oribatidae, Arachnida, Orthoptera, Uropodina

Institute of Chemistry

Address: Pázmány Péter sétány 1/A, Budapest H-1117
Homepage: http://www.chem.elte.hu

Director: Mr. Péter SURJÁN, Professor
E-mail: director@chem.elte.hu

Secretariat:
Building: Norther (1/A)
Room: 5.117
E-mail: intezet@chem.elte.hu
Phone: +36 1 372 2548; +36 1 372 2500, Ext.: 1514
Fax: +36 1 372 2592

The Institute is organized into two structurally different units. Education is connected to the Departments, and research work is carried out in the Laboratories.

Departments

Department of Analytical Chemistry
Head of the department: Mr. Győző LÁNG, Professor
Department of Inorganic Chemistry
Head of the departement: Mr. Tibor PASINSZKI, Professor
Department of Organic Chemistry
Head of the department: Mr. Ferenc HUDECZ, Professor
Department of Physical Chemistry
Head of the department: Mr. Attila CSÁSZÁR, Professor

Laboratories

Laboratory of Chemical Kinetics (Leader: Mr. Tamás TURÁNYI, Professor)
Laboratory of Chiroptical Structure Analysis (Leader: Mr. Miklós HOLLÓSI, Professor)
Laboratory for Speciation, Drug and Trace Analysis (Leader: Ms. Katalin PERÉNYI ZIH, Assistant Professor)
Laboratory of Chemical Informatics (Leader: Mr. András BARANYAI, Professor)
Laboratory of Colloid and Supramolecular Systems (Leader: Mr. Ferenc CSEMPESZ, Associate Professor)
Laboratory of Electrochemistry and Electroanalytical Chemistry (Leader: Mr. György INZELT, Professor)
Laboratory of Isolation Technics Teaching and Research (Leader: Ms. Zsuzsanna EKE, Assistant Lecturer)
Laboratory of Environmental Chemistry and Bioanalytics (Leader: Mr. Gyula ZÁRAY, Professor)
Laboratory of Interfaces and Nanosize Systems (Leader: Mr. Tibor GILÁNYI, Professor)
Laboratory of Molecular Spectroscopy (Leader: Mr. Attila G. CSÁSZÁR, Professor)
Laboratory of Nonlinear Chemical Dynamics (Leader: Mr. Miklós ORBÁN, Professor)
Laboratory of Nuclear Chemistry (Leader: Mr. Zoltán HOMONNAY, Professor)
Laboratory of Physical Organometallic Chemistry (Leader: Mr. Tibor PASINSZKY, Associate Professor)
Laboratory of Organic Syntheses (Leader: Mr. József RÁBAI, Associate Professor)
Laboratory of Organosilicon Chemistry (Leader: Mr. Roland SZALAY, Assistant Professor)
Laboratory of Structural Biology and Chemistry (Leader: Mr. András PERCZEL, Professor)
Laboratory of Theoretical Chemistry (Leader: Mr. Péter SURJÁN, Professor)

Associated Units

Research Group of Peptide Chemistry of the Hungarian Academy of Sciences
Head of the group: Mr. Ferenc HUDECZ, Professor
Research Group of Protein Modeling of the Hungarian Academy of Sciences
Head of the group: Mr. András PERCZEL, Professor

History

The first chemistry department of the university was established in 1770 by *Jakab J. WINTERL* a physician-botanical-chemist. The language of the education became Hungarian in 1860, and *Károly THAN* was appointed as the head of the department. He established the Institute of Chemistry in 1871. Due to his activity for about half a century the institute became the Hungarian centre of chemistry education (for teachers, physicians, pharmacists), as well as the centre of graduate studies in chemistry at that time. Several internationally recognized scientists laid the ground for the different branches of chemistry: *Lajos WINKLER* (classical chemical analysis, pharmacological chemistry), *Gusztáv BUCHBÖCK* (phyisical chemistry), *Béla LENGYEL* (anorganic and analytical chemistry), *Tibor SZÉKI* and *Győző*

BRUCKNER (organic chemistry), *Gyula GRÓH* (kinetics), *László SZEBELLÉDY* and *Elemér SCHULEK* (pharmacutical analysis), *Aladár BUZÁGH* (colloid chemistry), *Tibor ERDEY-GRÚZ* (electrochemistry), *Árpád GERECS* (chemical technology), *Attila VÉRTES* (nuclear chemistry), *Péter PULAY* (quantum chemistry). These activities resulted in 8 different chemistry departments for the 80s.

Accreditation for awarding the chemistry MSc was received by the Institute in 1946 (earlier only chemistry teachers were awarded a diploma). The Chemistry Graduate School was established in 2000, giving a newly organized form for graduate education.

Integration of the departments started in 1990, when the new building was completed. The centralized Chemistry Institute was established in 2005, and has been operating according to its new structure since April 2006.

Teaching

Starting from the academic year of 2006-2007, the Institute has been offering a six-semester BSc Programme followed by four-semester MSc Programmes, and a subsequent PhD Programme with a duration of three years generally. Graduate study for English-speaking students is offered.

BSc programme: Chemisty
Specialisations: Chemistry, Teacher
MSc programmes: Chemist, Teacher
Chemist specialisations: Analitycal Chemistry, Material Research, Pharmaceutical Research, Structural Research, Synthetic Chemistry

More information of BSc and MSc programmes: http://www.chem.elte.hu/departments/engedu

PhD School of Chemistry

School Leader: Mr. György INZELT, Professor
Programmes:
Analitical Chemistry, Colloid- and Environmental Chemistry, Electrochemistry
Head of Programmes: Mr. Gyula ZÁRAY, Professor
Synthetic Chemistry, Material Science and Biomolecular Chemistry
Head of Programmes: Mr. András PERCZEL, Professor
Theoretical and Physical Chemistry, Structural Chemistry
Head of Programmes: Mr. Péter SURJÁN, Professor

Research

Applied Synthesis

The principal objective of the research carried out in our laboratory is the broadening of the applications of synthetic chemistry. The main lines of research in our laboratory are: design and synthesis of new heterocyclic ligands and their application in catalysis; the development of new catalytic procedures and their application in the synthesis of biologically important compounds, the design and synthesis of new sensor molecules and establishment of their scope, the preparation of „unusual" heterocycles and the study of their reactivity; the synthesis of active drug ingredients.

Chemical Kinetics

Investigation of combustion, atmospheric chemical and biological kinetic systems. Simultaneous coupling of chemical reactions and diffusion may result in the emergence of spatial patterns; these patterns are being investigated experimentally and using computer simulations. Investigation of processes on a femto-second timescale requires special experimental methods and special handling of experimental data.

Chiroptical Structure Analysis

Synthesis of linear and cyclic model peptides, phosphopeptides, glycopeptides and peptidomimetics; ECD studies on peptides, peptide derivatives and peptidomimetics; combined application of ECD and Fourier-transform infrared (FTIR) spectroscopy for conformational screening of peptides and proteins; spectroscopic characterization of H-bonded folded (turn) structures in peptides and proteins; ECD studies of oligodezoxyribonucleotides and their complexes with fusogenic peptides; ECD studies of cation complexes of peptides and proteins; ECD spectroscopic characterization of chiral supramolecular hosts and their aralkylammonium and inorganic cation complexes; cryochemistry; preparation and HPLC chromatographic testing of chiral crown ether based starionary phases; VCD spectroscopic studies of peptides and proteins.

Chemical Informatics
Coordination of theoretical, computer-assisted research activities including molecular modeling, relationships between molecular structure and properties, processing measurement data, and handling data bases.

Colloidal and Supramolecular Systems
Experimental and theoretical studies on the thermodynamic properties of macromolecular solutions and, on the interfacial behavior of macromolecular colloids. Investigation of supramolecular complexation in cyclodextrin solutions, use of supramolecular complexes for selective separations. Studies of interactions in dispersions between potential colloidal and supramolecular drug carriers.

Electrochemistry and Electroanalytical Chemistry
Synthesis, characterization and application of redox and intrinsic contucting polymers; electrochemical materials studies (preparation of composites, alloys and corrosion investigations); electrochemical transformations and electroanalysis of microcrystals; monitoring and decomposition of environmental pollutants by electrochemical methods; investigations of periodic-chaotic phenomena in electrochemical systems.

Environmental Chemistry and Bioanalytics
Chemical characterization of environmental and biological samples applying advanced analytical methods (ICP-MS; HPLC-ICPMS; GC-MS-MS; TXRF). Determination of physical and chemical properties of urban aerosols and study of their health effects. Development of waste water treatment technologies for degradation of xenobiotics e.g. pharmaceutical residues.

Interfaces and Nanosize Systems
The research group deals with surfactants, polymers, polyelectrolytes, biopolymers and with the interaction between these components at interfaces and in bulk aqueos solutions by means of theoretical (thermodynamic and molecular interaction models, MC simulation) and experimental methods.

Molecular Spectroscopy
The principal research aim is the development of new experimental and computational techniques in the field of molecular spectroscopy and structural research and the use of traditional, available techniques for important chemical problems of widespread interest. Recently the research was focused on the investigation of the vibrational spectra of biologically important, optically active radicals using matrix isolation infrared, Raman and VCD spectroscopies, quantum-chemical computation of the complete rotational-vibrational spectra of small molecules (for example, H2O and H3+), structural investigation of biomolecules through NMR spectroscopy, and the interpretation of high-resolution experiments using a database approach.

Nonlinear Chemical Dynamics
Constructions chemical oscillators by semiempirical methods and design: induced oscillations in the concentration of some ions that are relevant to biology. Studies on the mechanism of chemical oscillatory systems: experiments and simulations. Dynamical and stationary pattern formation in two-dimensional rection-diffusion solution and gel systems.

Nuclear Chemistry
The application of nuclear methods in structural chemistry research. Currently, Mössbauer spectroscopy with 57Fe, 119Sn, and 151Eu is applied to study colossal magnetoresistant materials, metal surfaces and multilayers as well as coordination chemistry problems. Positron annihilation spectroscopy is used to explore defect structure in various materials including polymers, alloys and metal oxides. The Laboratory has a facility to handle open radioactive sources in a full-equipped "C"-level isotope laboratory.

Physical Organometallic Chemistry
Research is centred on the electronic, and structural problems of organometallic model systems in order to understand better the metal-ligand interaction. Investigations are based on UV photoelectron and mass spectrometric techniques supported by photoelectron-photoion coincidence and electron transmission spectroscopic measurements made in international co-operations.

Organic Syntheses
Synthesis and reactions of exotic hydrocarbon derivatives. Effective optical resolution of racemic acids using non-conventional methods. Fluorous syntheses and separations with "C-CF" nanocomposite materials. Combinatorial synthesis of focussed compound libraries. Development of new microwave-assisted synthetic methods for the preparation of peptides and peptidomimetics. Preparation of immobilized metabolite libraries.

Organosilicon Chemistry
Preparation, structure determination and solvolysis kinetic investigation of organosilicon compounds, especially silylated carbonic acid derivatives. Spectroscopic and quantum chemical study of the role of the pseudo pentacoordination around the silicon atom in order to elucidate the relationship between structure and reactivity. Use of compounds as silylating agents in surface modifications and derivatizations, as precursors for the generation of reactive intermediates (nitrenes, isocyanates), as starting materials in condensation reactions and ligandum transfer reagents in the synthesis of metal complexes, respectively.

Speciation, Drug and Trace Analysis
Study of group-specific protonation of bio- and drug molecules, investigation of interactions of bio- and drug molecules with metal ions, macromolecules and supramolecular systems by multinuclear NMR and atom spectrometric method; determination of principal components, stability analysis and organic/inorganic impurity profiling of pharmaceutical substances and active ingredients, by capillary electrophoretic, 1D/2D NMR, HPLC-NMR and GF-AAS techniques. Separation of trace element species (in-field) by solid phase extraction and electrochemical preconcentration analysis by GF-AAS. Determination of biologically important elements in human brain, which have been previously scarcely investigated, analysis of brain samples from Alzheimer's diseased patients.

Structural Biology and Chemistry
Investigation of structure-activity relationships of biological macromolecules (primarily proteins) using NMR spectroscopy and X-ray diffraction. Characterization of the formation of complexes of proteins with selected molecules and the investigation of their dynamical properties. Examination of the conformational preferences of alpha- and beta-peptides using quantum chemical and bioinformatical methods.

Theoretical Chemistry
Development of new theoretical (quantum chemical) models and methods for the description of electronic structure of chemical systems. Computations on the electronic structure and spectroscopic properties of molecules and nanosystems. Ab initio quasiclassical modelling of molecular dynamics to describe tautomerism and photochemical processes in particular in biomolecules.

Institute of Geography and Earth Sciences

Address: Pázmány Péter sétány 1/C, Budapest H-1117
Homepage: http://geosci.elte.hu

Director: Ms. Mária SZABÓ, Professor
E-mail: szmarcsi@ludens.elte.hu

Secretariat:
Building: Southern (1/C)
Room: 7.313
E-mail: ffi@ffi.elte.hu
Phone: +36 1 372 2500, Ext.: 1767

History
The Institute was established in 2006 by merging three pre-existing institutes (Geography, Geology, Environmental Physics) having comprised in all 12 departments. The departments still do have their own, quite independent, research activities, though efforts are currently made to foster closer collaboration and interdisciplinary projects as well.

The strength of the new Institute is, its potential to study any scientific problem with the multidisciplinary approach of Earth Sciences from Geography through Geology, Geophysics, Meteorology, to Astronomy and Space Research. This multidisciplinarity is reflected also by the curricula offerred at both the graduate and the post-graduate level.

Departments

Centre of Geography
Address: Pázmány Péter sétány 1/C, Budapest H-1117
Homepage: http://geogr.elte.hu

Head of the centre: Ms. Erzsébet HORVÁTH, Associate Professor
Building: Southern (1/C)
Room: 1-308
E-mail: erzsebet.horvath@geology.elte.hu
Phone: +36 1 372 2500/1802

Departments
Department of Environmental and Landscape Geography
Head of the department: Ms. Mária SZABÓ, Professor
Department of Physical Geography
Head of the department: Mr. Dávid KARÁTSON, Associate Professor
Department of Regional Science
Head of the department: Mr. József NEMES-NAGY, Professor
Department of Social and Economic Geography
Interim head of the department: Mr. József NEMES-NAGY, Professor

Associated unit
Laboratory of Applied Geography (external unit in Geographical Research Institute of the Hungarian Academy of Sciences)
Leader of the laboratory: Mr. Ádám KERTÉSZ, Scientific advisor

History
Geographical education at University level started in 1870, when *János HUNFALVY* was appointed as first professor of geography in Hungary. In 1888 *Lajos LÓCZY*, the renowned Asia researcher and geomorphologist took the professorship. He established the Geographical Institute and Seminar as a new educational form. Between 1910 and 1920 *Géza CZIRBUSZ*, founder of the Hungarian antropogeography was the head of the Institute. During the period between 1921 and 1940 the personality and work of *Jenő CHOLNOKY* ensured high-level geography education. He represented the Davisian geomorphology in Hungary and he is well-known for his works in popularisation of science.

The Institute was divided into two departments in 1942. The head of the Department of Physical Geography was *Béla BULLA*, founder of the climatic geomorphology in Hungary. *Tibor MENDÖL*, an expert in settlement-geography,

directed the Department of Human Geography. In 1953 a third department, Department of Regional Economic Geography was formed under the leadership of *Ferenc KOCH*. Their successors, *Sándor LÁNG*, *András SZÉKELY*, *Zoltán ANTAL* and *Béla SÁRFALVY* continued with the established high standards of geographical education.

Teaching

BSc programme: Geography

Specialisations: Environmental and Landscape Geography, Regional Analysis, Regional and Urban Development, Teacher

MSc programmes: Geographer, Teacher

Geographers specialisations: Geomorphology, Environmental and Landscape Geography, Regional Analysis, Regional and Urban Development

More information of BSc, MSc and PhD programmes: http://geosci.elte.hu/en_oktatas.htm

Research

Physical, Environmental and Landscape Geography

Environmental Studies; Soil Genetics and Dynamics; Biogeography; Landscape Ecology; Landscape Evaluation and Protection; Hydrogeography; Geomorphology; Volcanology; Anthropogenic Geomorphology; Physical Geography of Hungary and the Carpathian Basin; Remote Sensing, Quaternary Studies, GIS, DTM and its deducted maps.

Human and Regional Geography, Regional Science

Geography of Agriculture, Industry and Transport, Geography of Information Society, Population- and Settlement Geography, Migration Studies, The Economic Geography of Hungary, Historical Geography, History of Geographical Ideas, Math-Statistical Methods in Geography, The Social and Economic Geography of Continents, EU Regional Policies, Political Geography, Theory of Spatial Development, Regional Modeling, Social Space Theory, Environmental and Regional Development in Hungary.

Centre of Earth Sciences

Address: Pázmány Péter sétány 1/C, Budapest, H-1117

Head of the centre: Mr. Ferenc MOLNÁR, Associate Professor

Building: Southern (1/C)
Room: 0-719
E-mail: molnar@abyss.elte.hu
Phone: +36 1 372 2500, Ext.: 8333

Departments:

Department of Physical and Applied Geology (http://applied.geology.elte.hu/index_hu.html)

Head of the department: Ms. Andrea MINDSZENTY, Professor

Department of Astronomy (http://astro.elte.hu/)

Head of the department: Mr. Kristóf PETROVAY, Associate Professor

Department of Geophysics and Space Research (http://geophysics.elte.hu/)

Head of the department: Mr. Gábor TÍMÁR, Associate Professor

Department of Meteorology (http://nimbus.elte.hu/)

Head of the department: Ms. Judit BARTHOLY, Professor

Department of Mineralogy (http://abyss.elte.hu/department/mineral.html)

Head of the department: Mr. István DÓDONY, Associate Professor

Department of Palaeontology (http://paleo.elte.hu/)

Head of the department: Mr. Miklós KÁZMÉR, Associate Professor

Department of Petrology and Geochemistry (http://iris.elte.hu/geo/aaa/dep/petrol/petrol.htm)

Head of the dapartment: Mr. Szabolcs HARANGI, Professor

Associated Units

Laboratory of Astrophysics (external unit in Konkoly Observatory of the Hungarian Academy of Sciences)

Leader of the laboratory: Mr. Lajos G. BALÁZS, Director of Konkoly Observatory

Research Group of Geology, Geophysics and Space Science of the Hungarian Academy of Sciences
Head of the group: Mr. János HAAS, Researcher Professor
Department of Regional Geology (external unit in Geological Institute of Hungary):
Head of the department: Mr. László FODOR, Head Researcher
UNESCO Chair „Erdélyi Mihály" School of Advanced Hydrogeology
Chair holder Mr. Imre MÜLLER, Professor
Co-chair holder Ms. Judit SZŐNYI MÁDL, Associate Professor

History

The University has long-established tradition in teaching geology. Mineralogy, Palaeontology and Geology were the first departments founded, as early as the second half of the 19th century. These departments were the nuclei around which all the other geological departments „crystallized". Scientists and professors of international reputation were *Miksa HANTKEN*, *József SZABÓ*, *József KRENNER*, *Antal KOCH*, *Károly PAPP*, *Károly TELEGDI ROTH*, *Béla MAURITZ*, *Elemér SZÁDECZKY-KARDOSS*, *Kálmán SZTRÓKAY*, *László BOGSCH*, *Sándor VITÁLIS* and *Elemér VADÁSZ*. The independent Geology curriculum was established after the 2nd world war as a result of the growing need for mineral resources. Ever since then, economic geology, alongwith other applications, particularly hydrogeology, have been important subjects for ELTE's students of geology. Environmental Geology became included in the curriculum in the late 80's. In addition also traditional subdisciplines like Palaeontology, Mineralogy, Stratigraphy Structural Geology and Sedimentology have been intensely cultivated at the MSc research level.

Teaching

BSc programme: Earth Science
Specialisations: Astronomy, Geology, Geophysics, Meterology, Geography, Cartography and Geoinformatics
MSc programmes: Astronomer, Geologist, Geophysicist, Meteorologist
Geologist specialisations: Archeometry, Environmental Geology, Geology-Palaeontology, Hydrocarbon Geology, Hydrogeology, Mineralogy-Petrology-Geochemistry, Mineral Resources
Geophysicist specialisations: Geophysical Research, Space Research and Remote Sensing
Meteorologist specialisations: Climate Research, Weather Forecast

More information of BSc, MSc and PhD programmes: http://geosci.elte.hu/en_oktatas.htm

Research

Applied and Environmental Geology
Environmental geology, hydrogeology and vulnerability of porous and fissured reservoirs, basin hydraulics, thermal-water-based geothermal resources, geostatistics, applied sedimentology (geology of hydrocarbons, bauxites, paleosols and paleokarst), structural geology, geomathematics/geostatistics (time series analyses, dynamic factor analysis, space statistics), archeogeopedology.

Physical and Historical Geology
Sedimentology and microfacies studies, bio- and lithostratigraphy, palaeogeography, structural geology, basin analysis, stratigraphy, sedimentology and regional geology of Mesozoic and Cenozoic sedimentary formations

Mineralogy
Mineralogy, crystallography, geology of ore deposits

Palaeogeography
Palaeozoic-Mesozoic stratigraphy of Hungary; Major tectonic and palaeogeographic relationship of Tertiary and Pre-Tertiary units of Hungary with their surroundings; Sedimentology of carbonates and siliciclastics

Palaeontology
Evolution, systematics, palaeoecology and biostratigraphy of invertebrates and vertebrates, studies of fossils and their host rocks, facies and palaeontology, history of palaeontological investigation

Petrology and Geochemistry
Igneous petrogenesis and geodynamic relationships, volcanology, petrology and origin of igneous rocks and ophiolites in the Carpathian-Pannonian Region, tephra-correlation, petrology of meteorites, Petrology of ceramics, Petrology and geochemistry of mantle xenoliths and the nature of the lithospheric mantle, fluid inclusion studies, radon geochemistry, environmental geochemistry, archaeometry, petrology and geochemistry of sedimentary rocks

Regional Geology (External Unit)
Regional geology, palaegeography of Hungary and the surrounding Alp-Carpathian-Dinaric terrains, Mesozoic stratigraphy and paleoenvironment, Cretaceous carbonate platforms of the Mediterranean region

Astronomy
Celestial mechanics, Structure and dynamics of the Milky Way System, Investigation of stationary and flare stars of open clusters, Astrophysical turbulence and dynamo theory, Solar magnetohydrodynamics, Spectroscopy of young stars, Physics of the interstellar matter

Geophysics and Space Science
Global and Regional Studies in Geophysics
Theoretical studies of the Earth's gravity and magnetic fields, Studies of the Earth tides, Palaeomagnetism and archaeomagnetism with applications to geological and archaeological problems, Geophysical fluid dynamics, Investigations of mantle processes, Quantitative modelling of the thermal structure and evolution of the continental lithosphere, Geothermal studies, measurements of thermal parameters, heat flow determination, construction of geothermal maps, Neotectonic studies and landscape evolution modeling, Mechanism of formation of extensional basins, Assessment of earthquake risk
Seismic inversion theory, and applications for hydrocarbon exploration, Interpretation of seismic data, image processing and pattern recognition techniques, Interpretation of gravity and magnetic measurements, Environmental geophysics, Borehole and penetration logging modeling, Quality control in geophysical interpretation, High resolution seismic electric and radar prospecting
Remote Sensing and Space Research
Radio wave propagation theory, VLF and beacon studies of the ionosphere, magnetosphere and the solar atmosphere; Study of magnetospheric VLF propagation and electron density distribution using whistlers; Applications of remote sensing (yield estimation and forecasting).

Meteorology
Research in dynamic meteorology, Atmospheric energetics, Numerical forecast models and dynamical modelling of atmospheric processes, Measuring and modelling boundary layer processes, Climatological research: analysis of geopotential height fields and regional precipitation, estimation of regional climate changes, Urban climatology, Soil-vegetation-atmosphere transfer modelling, Land-surface parametrization, Estimation of evapotranspiration, Meteorological aspects of environmental protection

PhD School of Earth Sciences
School leader: Mr. Gyula GÁBRIS, Professor
Programmes:
- Geography and Meteorology
  - Head of the programme: Mr. József NEMES-NAGY, Professor
- Geology and Geophysics
  - Head of the programme: Mr. Miklós MONOSTORI, Professor
- Cartography
  - Head of the programme: Mr. István KLINGHAMMER, Professor

Institute of Mathematics

Address: Pázmány sétány 1/C, Budapest, H-1117
Homepage: http://www.cs.elte.hu

Director: Mr. László LOVÁSZ, Professor
E-mail: lovasz@cs.elte.hu

Secretariat:
Room: 3-510
E-mail: matint@cs.elte.hu
Phone: +36 1 381 2202, +36 1 372 2500/8102
Fax: +36 1 381 2174

Departments

Department of Algebra and Number Theory
Head of the department: Mr. Emil KISS, Professor
Department of Analysis
Head of the department: Mr. Miklós LACZKOVICH, Professor
Department of Applied Analysis and Computational Mathematics
Head of the department: Mr. István FARAGÓ, Associate Professor
Department of Computer Science
Head of the department: Mr. Péter KOMJÁTH, Professor
Department of Geometry
Head of the department: Mr. Balázs CSIKÓS, Associate Professor
Department of Operations Research
Head of the department: Mr. Tibor JORDÁN, Associate rofessor
Department of Probability Theory and Statistics:
Head of the department: Mr. György MICHALETZKY, Professor
Mathematics Teaching and Education Centre
Head of the centre: Ms. Éva VÁSÁRHELYI, Associate Professor

Associated Units

Research Group of Combinatorial Optimization of the Hungarian Academy of Sciences
Head of the group: Mr. András FRANK, Professor

Our Institute has a close relationship to the Alfréd Rényi Institute of Mathematics, Hungarian Academy of Sciences, both in scientific research, and in teaching.

History

Between World Wars I and II, mathematics at the University was hallmarked by the activity of *Lipót FEJÉR* (Fourier analysis, interpolation theory, function theory) and *Béla KERÉKJÁRTÓ* (topology of manifolds). In the decades that followed, the University had such prominent professors of international reputation as *Frigyes RIESZ* (functional analysis, function theory, ergodic theory), *György HAJÓS* (group theory, geometry), *Pál TURÁN* (number theory, function theory, graph theory, approximation theory, etc.), *Alfréd RÉNYI* (probability and information theory, number theory, function theory, etc.) and *Rózsa PÉTER* (logic, foundations of mathematics), *József MOGYORÓDI* (martingale theory, Orlitz-spaces), *Ferenc KÁRTESZI* (projective geometry and finite geometry).

Teaching

BSc programme: Mathematics
Specialisations: Applied Mathematics, Mathematics Analysis, Pure Mathematics, Teacher
MSc programmes: Actuarial and Financial Mathematician, Applied Mathematician, Matematican, Teacher
Actuarial and Financial Mathematians specialisations: Actuarial Mathematics, Quantitative Finance
Applied Mathematicians specialisations: Applied Analysis, Operations Research, Computer Science, Stochastics

PhD School of Mathematics
School Leader: Mr. Miklós LACZKOVICH, Professor
Programmes:
Theoretical Mathematics
Head of the programme: Mr. András SZŰCS, Professor
Applied Mathematics
Head of the programme: Mr. György MICHALETZKY, Professor

More information of BSc, MSc and PhD programmes: http://www.cs.elte.hu/programs/bsc.htm?lang=en

Research
Some of the research topics mentioned below are in fact joint projects with other departments of the university, with the Rényi Institute, and with various establishments throughout the world via formal or informal scientific relationships. The Institute conducts research in various fields of applied and theoretical mathematics. Below we present the main areas of research and the scientists working in the respective fields.

Algebra and Number Theory
Finite groups (simple groups, characters, p-groups, permutation groups, statistical group theory, loop theory).
Ring theory (stratified algebras, homological duality, representation theory).
Universal algebra (commutator theory, tame congruence theory, lattice theory, partially ordered sets, weakly associative lattices, embeddings of categories).
Combinatorial and analytic number theory (distribution and characterization of arithmetical functions, Diophantine approximation, irregularities of distribution, statistical theory of partitions, sequences of integers, additive number theory).
Computational number theory (pseudorandom sequences).

Analysis
Real variables (measure theory, integration, properties of derivatives, spaces of functions, applications).
Complex analysis (one and several variables, Turán's power sum method and its applications, complex manifolds).
Approximation theory.
Topology (general, set theoretical).
Algebraic and differential topology (topology of manifolds and smooth maps).

Computer Science
Combinatorics (graphs, matroids, combinatorial optimization).
Theoretical computer science (graph algorithms, algorithms in group theory and number theory, parallel processing, VLSI, cryptography, data mining, the science of the Web).
Geometric questions (discrete, projective and computational geometry).
Set theory (infinitary combinatorics, applications of logic).
Formal languages and automata (Chomsky-classes).

Operations Research
Linear, nonlinear, multiobjective optimization.
Combinatorial optimization, discrete programming.
Stochastic programming.
Fuzzy decision analysis, neural nets.
Applications in engineering and economics.

Applied Analysis and Computational Mathematics
Functional Analysis (Operator theory on function spaces, Banach spaces, Hilbert spaces, C*-algebras, Banach-algebras, representation theory, extension theory, dilation theory, general *-algebras, their representation theory, momentum theory, integral representations.)
Nonlinear functional analysis (Lie-groups, Lie-algebras, their representations and cohomolgy theory, deformation theory.)
Differential equations (Linear and nonlinear elliptic and parabolic differential equations, numerical methods for partial differential equations. Applications in physics and chemistry.)
Mathematical Physics (Mathematical models of physics both classical and quantum mechanical, representation theory in mathematical physics. Noncommutative probability and statistics.)

Geometry
Discrete, Combinatorial and Finite Geometry (Packing and covering theory, theory of tilings, combinatorial properties of tilings, combinatorial properties of geometric structures, Galois geometry)

Convexity (Analytic convexity including the theory of fundamental measures of convex bodies, geometry of numbers and the theory of point-lattices; Non-analytic convexity containing Helly-type theorems, Helly dimension, illumination problems, combinatorial theory of polytopes and their application in computational theory)
Differential Geometry and Differential Topology (Riemannian and semi-Riemannian geometry, symplectic geometry, spaces of non-positive curvature; transformation groups, symmetric spaces, Lie groups and their representations; applications of differential geometry and Lie groups in mathematical physics)

Probability Theory and Statistics
Probability Theory (Combinatorial probability, limit theorems, algebraic probability, martingales, reliability theory.)
Mathematical Statistics (Multivariate analysis, numerical and computational aspects of statistics, statistics of extremes, applications of statistics in hydrology, statistics of stochastic processes.)
Stochastic Analysis (Stochastic differential equations, partial stochastic differential equations, random fields, stationary processes, realization theory)
Information Theory (Cryptography, data compressing, loglinear models, theory of information distances)

Teacher Training in Mathematics
Education research and planning, curriculum and instruction in general and at different school levels and types, comparative studies on mathematics education in different countries. Analysis of textbooks, development and evaluation of textbooks.
Investigating and problem solving, cognitive processes, concept formation, problem solving, understanding, problem solving and heuristic strategies, the rule of the analogy, methodology of problem solving, classification of exercises, problem solving in the curriculum.
Representation and concept building, manipulative materials and their use in the classroom (visualizations, teaching aids, models, worksheets).
Computers in mathematics teaching: pedagogical and didactical aspects of computer based mathematics teaching (graphic calculators, computer algebra systems, dynamic geometrical systems, hypertext, hypermedia, online learning)
For PhD students: introduction into scientific working, empirical research, documentation of scientific work, research methods of didactics of mathematics, interaction specificity.
Computer aided mathematics learning for disadvantage pupils in rural area.

Institute of Physics

Address: Pázmány Péter sétány 1/A, Budapest H-1117
Homepage: http://fizika.elte.hu

Director: Mr. Jenő KÜRTI, Professor
E-mail: kurti@virag.elte.hu

Secretariat:
Room: 4.69
E-mail: titkar@metal.elte.hu
Phone: +36 1 372 2845, +36 1 372 2500, Ext.: 6445
Fax: +36 1 372 2811

Departments

Department of Atomic Physics
Head of the department: Mr. Zsolt FREI, Professor
Department of Biological Physics
Head of the department: Mr. Jenő KÜRTI, Professor
Department of Materials Physics
Head ot the department: Mr. István GROMA, Professor
Department of Physics of Complex Systems
Head of the department: Mr. Gábor VATTAY, Professor
Department of Theoretical Physics
Head od the department: Mr. László PALLA, Professor

Associated Units

Research Group for Statistical Physics of the Hungarian Academy of Sciences
Head of the Group: Mr. Tamás VICSEK, Professor
Research Group of Theoretical Physics of the Hungarian Academy of Sciences
Head of the Group: Mr. Zalán HORVÁTH, Professor

History

Teaching of Physics started in the very first semester of the academic year 1635–1636. The Institute has had among its professors well known scientists as *Loránd EÖTVÖS* (the equivalence of the gravitating and the inertial mass), *György HEVESY* (radioactive tracing, Nobel-Prize 1943), Károly Novobátzky (consistent quantization of the photon field), *György BÉKÉSSY* (physics of the ear, Nobel-Prize 1961), *Lajos JÁNOSSY* (extended air showers in cosmic rays), *Tibor NEUGEBAUER* (atomic and molecular physics), *Imre FÉNYES* (irreversible thermodynamics and stochastic interpretation of quantum phenomena), and *György MARX* (astrophysics and neutrino physics).

Teaching

BSc programme: Physics
Specialisations: Astronomy, Applied Envionmental Physics, Biophysics, Geophysics, Meteorology, Physics, Teacher
MSc programmes: Physics, Teacher
Specialisations in Physics: Biophysics, Information Physics, Environmental Physics

PhD School of Physics

School leader: Mr. Zalán HORVÁTH, Professor
Programmes:
Material Science and Solid State Physics
Head of the programme: Mr. János LENDVAI, Professor
Particle Physics and Astronomy
Head of the programme: Mr. Ferenc CSIKOR, Professor
Statistical Physics, Biological Physics and Physics of Quantum Systems
Head of the programme: Mr. Jenő KÜRTI, Professor
Teaching of Physics
Head of the programme: Mr. Tamás TÉL, Professor

More information of BSc, MSc and PhD programmes: http://ion.elte.hu/kredit/Intezet/Physics_Programs_in_English.html

Research

Astrophysics

Large scale structure of the Universe; Nuclear astrophysics; Inflationary Cosmology; Cosmological Phase Transitions

Biological Physics

Theoretical studies and modelling of collective motions, molecular motors, evolution theory; Complex structure of tissue cells; Atomic force microscopy and force spectroscopy; Spectroscopy of biologically active molecules; Physical activity of biomembranes; Investigations of surfaces by optical wave guiding sensors; Spectroscopy and quantum chemistry of fullerenes and carbon nanotubes; The role of polarization in animal vision

Environmental Fluid Dynamics

Theory of rotated and stratified fluids; Turbulence; Chaotic advection; Numerical simulation of large scale flows; Experiments with rotated and stratified fluids in the Kármán Laboratory of Environmental Flows

Field Theory and Particle Physics

Phenomenology of the standard model; Non-Abelian quantum fields; Computational methods of quantum theory; Finite temperature field theory; Foundation of quantum theory; Classical field theory; Theory of relativity; Low dimensional quantum field theories; Conformal field theories; String theory; Experimental high energy physics

Low Temperature Physics

Magnetic properties of superconducting alloys; Preparation and investigation of high Tc superconducting materials; Application of irreversible thermodynamics to low temperature phenomena; Technical applications

Methodology of Physics Teaching

New experiments for laboratory and classroom demonstrations; Postgraduate training of teachers; Teaching modern physics on PC's; Modernization of the physics curricula at secondary, tertiary and postgraduate levels; History of science

Nuclear Physics

Intermediate energy nuclear reactions; Heavy ion collisions; Dynamical changes in atomic nuclei; Applied radiation protection and neutron activation methods; Nuclear reactions of astrophysical interest; Nuclear environmental safety

Solid State Physics and Materials Science

Mechanical properties and microstructure; Lattice defects; Precipitation in alloys; Textures and the plasticity of metals; Radiation damage; Amorphous and nanocrystalline materials, quasi crystals; Metallic glasses; Strongly correlated electron systems

Statistical Physics

Nonlinear dynamical phenomena; Fractal growth; Deterministic chaos (fully developed chaos, multifractality, quantum chaos); Cellular automata; Spin glasses; Neural networks; Phase transitions; Bose–Einstein condensed gases; Mesoscopic systems; Econophysics; Modelling of Internet traffic

Lágymányos Campus, Southern Building

OTHER UNITS

Centre of Environmental Sciences

Address: Pázmány Péter sétány 1/A, Budapest H-1117
Homepage: http://kornyezet.elte.hu

Head of the centre: Mr. Ádám KISS, Professor
E-mail: kissadam@ludens.elte.hu

Secretariat:
Room: 0.122
E-mail: atomph@ludens.elte.hu
Phone: +36 1 372 2775, +36 1 372 2500, Ext.: 6345
Fax: +36 1 372 2753

History
The predecessor of the School, the Faculty Task Force for Environmental Studies was founded in 1996 in order to coordinate the inter- and multidisciplinary efforts of the faculty of all different disciplines of natural sciences for the promotion of teaching and research activities in the field of environmental studies and for strengthening environmental oriented thinking. The organizational unit was reorganized in 2005 and got the name of School of Environmental Studies. Members of the School belong at the same time to different departments of the Faculty as well. The master degree programme Teacher Training in Environmental Studies was launched in 1997, the second MSc programme coordinated by the School, the Environmental Research Studies has been started in academic year 2004/2005 and accepts students since then. The School of Environmental Studies has successfully prepared the accreditation of the new BSc programme in Environmental Studies. This BSc course has accepted the first 150 students in 2006/2007.

Main objectives of the Centre of Environmental Studies are
- to organize the training in Environmental Studies BSc level programme,
- to prepare the accreditacion of the second cycle MSc level programmes on the basis of the recently started first cycle BSc program in Environmental Studies (the training in Environmental Research Studies and Teacher Training for Environmental Studies),
- to organize the now outrunning Environmental Research Studies and Teacher Training for Environmental Studies MSc level programmes,
- to initiate and coordinate the inclusion of environmental moduls in the traditional non-environmental teaching programmes of the Faculty of Science,
- to propose and manage multidisciplinary projects in the field of environmental science,
- to harmonize efforts with other Hungarian universities and research groups in teaching and research of environmental studies.

Teaching
Starting 2006 the new two cycle programmes have been started at this university. The the first cycle program in the field of Environmental Studies gives the BSc degree after three years. It can be followed by MSc second cycle programs in Environmental Research Studies and Teacher Training in Environmental Studies. The Master's degree programmes (MSc) Teacher Training in Environmental Studies and Environmental Research Studies were started after the official accreditation of the proposals of the Faculty Task Force in 1997 and 2004, respectively. The Teacher Training Program programme may be taken only in pair with biology, chemistry, geography or physics. The Master's degree programme Environmental Research Studies has been started in academic year 2004/2005.

BSc programme: Environmental Studies
Specialisations: Environmental Research, Geophysics, Geology, Meteorology, Teacher
MSc programme: Environmental Sciences, Teacher
Specialisations in Environmental Sciences: Applied Ecology, Environmental Physics, Environmental Earth Science, Instrumental Environmental Analysis

PhD School of Environmental Sciences
School leader: Mr. Ádám KISS, Professor
Programmes:

Environmental Biology
Head of programme: Mr. Keve T. KISS, Researcher Professor
Environmental Chemistry
Head of programme: Mr. Tamás TURÁNYI, Professor
Environmental Earth Sciences
Head of programme: Mr. András GALÁCZ, Professor
Environmental Physics
Head of programme: Mr. Ádám KISS, Professor

Centre for Multimedia and Educational Technology

Address: Pázmány Péter sétány 1/A, Budapest H-1117
Homepage: http://edutech.elte.hu

Head of the centre: Ms. Andrea KÁRPÁTI, Professor
E-mail: karpatian@t-online.hu

Secretariat:
Room: 7.26
Phone: +36 1 372 2961, +36 1 372 2500, Ext.: 6761
Fax: +36 1 372 2948

Associated Units

UNESCO Centre for ICT in Education
Head of the centre: Ms. Andrea KÁRPÁTI, Professor
Algernon Research Group
Head of the group: Mr. Gergely HANCZÁR, Assistant Lecturer

Main objectives

- to conduct Educational Technology graduate courses for teacher students;
- to do scientific research and coordinate international research projects as the Hungarian partner for OECD/CERI and EU/MINERVA on
  - the structure and development of ICT skills and competencies of students and teachers
  - the use of new IT devices in skills diagnostics and education (digital pen, active whiteboard, tablet PC, etc.)
  - the use of ICT (Information and Communication Technologies) in public and higher education
  - promoting learning processes of learners with special needs
  - promoting equity through ICT in education
  - developing methods of teacher training on the use of ICT in teaching, lifelong learning and school management

Disciplines taught by the Centre for Educational Technology and UNESCO Chair for ICT in Education
Educational technology (compulsory course for all teacher training students)
Course content: description and analysis of teaching aids in service of contemporary paradigms in education. New models of science and mathematics education and their technology-enriched environment – a theoretical introduction. Practice in use of traditional and novel teaching aids and equipment: presentation tools, photography, video film making, ICT-based learning environments (CAT, CAL). Methods of assessment of media and methods of educational technology, with special regard to digital teaching aids. Design and realisation of simple educational devices ad applications. Curriculum design with the use of technology-enriched learning environments.

ICT in Education (compulsory course for all teacher training students)
Course content: Basic knowledge of hardware and software tools necessary to utilise Information and Communication technologies (ICT) in primary and secondary education. Introduction to computer-supported learning environments, cognitive tools, ICT-based methods of constructivist and collaborative learning. Software and Internet resources most widely and successfully used in science and maths education are analysed and experimented with. Students develop, and at least partly realise a digital teaching aid (e.g presentation, simulation, educational home page, adaptive test) and include in a teaching project.

ICT-based methods in mathematics, physics, chemistry, and biology (specialization selected according to student demand)
Creative Photography
Digital Portfolio Assessment
ICT in Mathematics Education
Museum Education
Video Film Production
Digital Imaging
Desktop Publishing
Distance Education in an ICT Environment
Desktop Publishing

Services
- to manage and modernize the Hungarian version of EPICT, the European Pedagogical ICT Licence and train the trainers (called facilitators) for this accredited national teacher training course
- to develop and produce audiovisual and ICT (Information and Communication Technologies) educational materials;
- to run the Multimedia Resource Centre;
- advice, design and production of interactive instructional systems, multimedia learning packages;
- organization of special in-service training courses on new information and communication technologies and media education;
- design and production of CD-ROMs, instructional video programs, slide series, overhead transparencies, graphic media and printed learning materials.

Technical units
- Audiovisual Training Hall
- Microsoft Innovative Teacher Training Laboratory
- Sulinet (Hungarian Schoolnet) PC Lab
- BETA SP Video Studio and Student Lab
- Photo Studio and Student Lab
- Multimedia Development Lab
- Multimedia Resource Centre – part of the Library of the Faculty of Science

Department of History and Philosophy of Science

Address: Pázmány Péter sétány 1/A, Budapest H-1117
Homepage: http://hps.elte.hu

Head of the department: Mr. György KAMPIS, Associate Professor
E-mail: gk@hps.elte.hu

Secretariat:
Room: 1.711
Phone: +36 1 372 2924, +36 1 372 2500, Ext.: 6674
Fax: +36 1 372 2924

History
The Department of History and Philosophy of Science was formally established as an independent academic unit within the Faculty of Sciences of Loránd Eötvös University in 1994. Currently the Department consists of 5 tenured faculty; 3 further lecturers are affiliated with the department on a temporary basis. Members of the Department typically have a degree both in one of the sciences and in philosophy, which is advantageous in view of the teaching profile of the Department: The Department offers about 30 undergraduate courses in the area of history and philosophy of science (one course consisting of two 45 minute classes per week). The average number of students taking a course offered by the Department is above 2000 per term. The Department participates in several PhD programmes at the Faculty of Science, and two MSc programmes are in the progress of institution: one in cognitive science (funded by the MEI COGSCI grant of the EC) and one in the History and Philosophy of Science.

Establishing the Department also was motivated by the aim of creating in Loránd Eötvös University a research unit with a profile in history, philosophy and foundations of science, interpreted mainly in the Anglo-Saxon analytic tradition. The Department has been successful in establishing itself as a centre of research in Hungary in the discipline: its record in international publications in the field, its extensive international contacts, its cooperation with

science and philosophy departments in the Eötvös and other Hungarian universities and the number of research grants awarded to members of the Department make the Department unique in the Hungarian university system.

Teaching
In accordance with ongoing structural changes in higher education in Hungary, the Department offers service teaching compatible with both traditional and BSc/MSc requirements. Upper grade students working in the traditional system can meet the distribution requirements prescribed by state law: each science major has to take three 'compulsory-elective' courses outside the field of sciences; in particular, students majoring as science teachers have to take at least one course in the history of their science. To lower grade BSc students the Department offers 'elective' courses for 'free credits' also prescribed by the law.

The Department offers courses for more than 8000 credits per academic year. Courses include introduction to the history of science, philosophy of science, cognitive science, epistemology, history of philosophy, as well as specialized topics like foundations of physics, philosophical logic, and many others. Besides regularly offered basic courses, each semester a wide spectrum of specialized occasional courses is available to students. The Department runs the Budapest Semester in Cognitive Science for US students.

Research
The department carries out research in several subfields of history and philosophy of science broadly consured. Among other things, research is pursued in general philosophy of science, analytic philosophy of science, philosophy of mind, cognitive science, history and philosophy of physics, history and philosophy of biology, foundations of physics, social and cultural studies of science, agent-based modeling, multi-agent systems etc.

The Library of the Faculty of Science

Address: Pázmány Péter sétány 1/A – 1/C, Budapest H-1117
Homepage: http://ttklib.elte.hu

Interim chief librarian: Mr. Iván CSÁMER
Phone: +36 1 381 2131, +36 1 372 2500, Ext.: 8033
Fax: +36 1 381 2134
E-mail: csamer@edutech.elte.hu

Collections and Special Subject Collections:
Special Collection of Biology
Special Collection of Physics
Special Collection of Geography
Special Collection of Earth Sciences
Special Collection of Chemistry
Special Collection of Environmental Physics
Special Collection of Mathematics
Collection of the Centre for Educational Technology
Collection of the Department of History and Philosophy of Science
Unit of Electronic Information Service

History
After the fusion of the specialized subject libraries of the various departments the new Central Library of the Faculty was established on 1 January 2002. Information about the history of the department libraries can be found on the website of the library of the faculty.

Functions
The main aim in establishing the Faculty Library was to provide the necessary information and library background for the research and instruction carried out at the Faculty of Science, and also to help university students with their studies.

Fields of Collection
The fields covered by the library's collection policy are as follows: all the disciplines that constitute the fields of research and instruction at the Faculty (Biology, Physics, Geography, Earth Sciences, Chemistry, Environmental Physics, Environmental Studies, Mathematics, History of Science, Philosophy of Science) and, as far as possible, their auxiliary sciences and related branches of knowledge. Our aim is to cover these fields as extensively as possible and to collect the following types of documents (both Hungarian and foreign): monographs, reference books, course books, distributed lecture notes, supplementary teaching materials, dictionaries, books of maps, maps, publications of

conferences, periodicals, non-traditional documents, modern data carriers: CD-ROM, electronical journals, doctoral theses.

Facts and Figures (31 December 2008)

Books and bound periodicals	423 931
Audiovisual documents	863
Electronic documents	670
Other documents	19 342
Foreign periodicals	953
International exchange partners	220
Library users	5469
Reading-room capacity (on 5 locations)	323
Reader's terminals	51

Tasks completed since the establishment of the library:

Since the establishment of the library significant changes and developments have taken place, the main component of which are the following:

- the technical background has been greatly modernized: new computers, printers, photocopiers have been purchased as well as a scanner, CD-recorder, a fax machine, new software (Ariel), the equipment and the server of the Electronic Information Service Unit;
- the Electronic Information Service national programme provides an extended access to electronical databases;
- encyclopedies, technical dictionaries, Hungarian and foreign course books have been purchased with the aim to cover areas somewhat neglected so far;
- the Goethe Institute has donated new books to the library;
- a compact shelving system has been introduced and the number of open shelves has increased;
- a new storage system has been implemented in the various collections.

Museum of Natural History

Address: Pázmány Péter sétány 1/C, Budapest H-1117
Homepage: http://www.muzeum.elte.hu
Open hours: Monday, Wednesday, Friday 10-16 h, Sunday 10-14 h

Director: Mr. Tamás WEISZBURG, Associate Professor
E-mail: nhm@ludens.elte.hu
Phone: +36 1 381 2208; +36 1 372 2500, Ext.: 8108
Fax: +36 1 381 2211

Departments

Museum of Mineralogy
Museum of Petrology
Museum of Biology
Museum of Mathematics
Museum of Paleontology
Museum of Science History

Exhibitions

Mineralogy- and petrology exhibition
Biology- and paleontology exhibition

Biology and paleontology exhibition

The Bolyai College

Address: Nándorfejérvári út 13., Budapest H-1117
Homepage: http://www.bolyai.elte.hu

Director: Mr. Péter SURJÁN, Professor of Chemistry
E-mail: director@bolyai.elte.hu

Secretartiat:
E-mail: secretary@bolyai.elte.hu
Phone: +36 1 203 8221
Fax: +36 1 203 8250

Established in 1992 with the purpose of creating a motivating environment for intensive science education and research, the College came into operation in February 1994.

The 98 students, including 18 graduates, presently associated with the College were selected from the best young talents at the Faculty of Science and the Faculty of Informatics, who wish to pursue a career in research after their degrees.

The students of the College attend lectures, do their laboratory work and pass examinations at the University. In addition to this, they are offered extra lectures and occasional intensive courses on special topics at the College, take part in an extended seminar program, and their progress is assisted and monitored through tutorials. The College houses international doctoral courses, organizes language courses for its students, and supports their participation in summer schools abroad. The Fall semester 2006 a pilot course was started on concepts and best practice of technological and scientific innovation.

The educational and research activity is supervised by 8 senior staff members, working at the College part time. At the moment the staff members are:
Ms. Katalin SCHLETT, Assistant Professor - Biology
Mr. Péter ÓDOR, Associate Researcher - Biology
Mr. Géza FOGARASI, Professor - Chemistry
Mr. András GALÁCZ, Professor - Earth science
Ms. Erzsébet HORVÁTH, Associate Professor - Geography
Mr. András GÁCS, Associate Professor - Mathematics and informatics
Mr. Zoltán PORKOLÁB, Associate Professor - Mathematics and informatics
Mr. László SASVÁRI, Associate Professor - Physics

In the summer period the College hosts various international scientific meetings: smaller conferences, workshops, summer courses, etc.

The Student Union

Address: Pázmány Péter sétány 1/A, Budapest H-1117
Homepage: http://ttkhok.elte.hu

President: Mr. Attila JÁNOSI
E-mail: elnok@ttkhok.elte.hu

Office:
Room: 0.75
E-mail: irodavezeto@ttkhok.elte.hu
Phone: +36 1 372 2654; +36 1 372 2500 Ext.: 6054

The Student Union, founded in spring 1990, is an organization consisting of the elected representatives of more than 5000 students of the Faculty. Its general aim is to represent, advise and assist the students of the Faculty in every aspect of university life. The members of the Union form diverse groups with specific tasks. As the highest level of representation the Union aims to present a united front in the decision-making bodies of the Faculty (Faculty Council), where the students hold 1/3 of the mandate. The legislative body of the Union is the General Assembly, which consists of 49 representatives of the different disciplines.

The president of the Union is assisted by 3 vice-presidents and other office-holders responsible for different functions. Day-to-day duties are discharged by a Steering Board elected by the General Assembly. This includes the president of the Union, the vice-presidents and 10 members.

The interests of the students are also represented in the operative committees of the Faculty, which means that we can directly take the responsibility for shaping our own lives as students. The Study Affairs Group of the Union advises the students in study matters (possibilities to choose majors, information about school fees, the intricacies of the Examination Regulations, etc.). The Bursary Committee decides on the distribution of the money granted by the state for the students bursaries and social assistance. The Foreign Affairs Group is responsible for helping and managering the problems of the foreign students studying on the Faculty. They also liable for keeping contact with universities of other countries and finding scholarship opportunites for the students of the Faculty. You can connect them through the coordinator of the group (Mr. Péter D. RING – kulbiz@ttkhok.elte.hu).

The events held by the Union are coordinated by the Organizing Group. The Speciality Groups' members major in the same discipline. Their aim is to find solutions for problems specific for students studying in that field. The Student Union maintains contact with several institutions and universities from all over the world and helps students to be informed about international scholarship possibilities.

One of the important activities of the Student Union is the editing and publishing of a weekly newspaper, the Nyúz (this is the phonetic transcription of the word news). Its circulation is 2500, most of the readers are students of the Faculty. This is the only paper published by the Faculty, and it is subsidized from the budget of the Students Foundation and by the Student Union.

The background of these activities is provided by the Student Office, working under the supervision of the Union. The Student Office serves as the secretariat of the Union, and provides the students free and reduced-rate services (international student card, driver's school, language school, labor exchange, finding apartments and private tutoring information, domestic and foreign scholarship facilities, maps, movie programs, theatre tickets, etc.).

In order to be able to function independently, the Union has created a financial background for its activities by managing donations to the Students Foundation and running several enterprises on its own (Students' Store, preparation courses for the university entrance exams, summer camps, etc.). We have 10 employees who either work in the Students Office or participate in our work in another way (e.g. financial manager). All these enterprises work for students benefit or relate to different levels of education. Thus, they contribute to the general welfare of our University. Another advantage of the Students Foundation is that the granting of any kind of assistance for the students of the Faculty is decided by the students, thus enabling them to make responsible decisions concerning their own lives.

NOTICE TO READERS

Higher Education in Hungary

(Source: http://english.tpf.hu/pages/content/index.php?page_id=94)

Hungarian higher education stands for more than 600 years of academic excellence. The first university in Hungary was founded in Pécs, located in the southern region of Hungary, in 1367. Today there are 71 higher educational institutions in Hungary ranging from top research universities to minor colleges. The universities and colleges are financed either by the state, private organizations or a church.
(Hungarian institutions of higher education: http://english.tpf.hu/pages/subpage/index.php?id=525&page_id=94)

Hungary joined the Bologna Process in 1999 by signing the Bologna Declaration with 28 other countries to establish the European Higher Education Area by 2010.

The key objectives of the process are:
- to increase mobility by improving the comparability of the higher educational structures, qualifications and degrees, through developing proper tools for the recognition of periods of studies and degrees,
- to improve employability through the modernization of curricula and to strengthen links with the labour market,
- to enhance the quality of training by developing a scheme of quality assurance.

Three cycle system
The Act on Higher Education was inspired by the objectives of the Bologna Process. The new degree structure based on three cycles was adopted in December 2004. All main fields of study are implemented in accordance with the new structure. Exceptions are medicine, pharmacy, dental and veterinary studies, architecture, law and certain crafts, arts, design related study programmes, which retain a long single-cycle structure of 5-6 years.

The first cycle programmes last 6-8 semesters (3-4 years, 180-240 credit points) and are conducive to Bachelor's degrees. The second cycle, a prerequisite for a Master's degree last 2-4 semesters (1-2 years, 60-120 credit points).

Two-year advanced vocational programmes are also available on an optional basis prior to first cycle programmes wrapped up by advanced vocational qualifications. A maximum of 60 credit points in the advanced vocational programme categories are compatible for recognition in the first cycle. Any Bachelor's and Master's degree can be followed by specialised higher education training programmes. They do not entail another degree but offer an option for specialisation in a particular field of study.

Programmes can be full-time, part-time or based on distance learning.

A three-year doctoral study programme is a post-graduate alternative to follow any Master's or equivalent qualification. In addition, each candidate needs to possess a type 'C' intermediate level foreign language acquisition certificate and has to take an entrance exam which includes a written dissertation plan and an interview. The institutions are entitled to including further entrance requirements.

A doctoral study programme consists of two modules: the teaching module is composed of a course lasting 6 semesters (180 credit points) and a written thesis supported by scientific publications. The applicants have to pass two oral doctoral exams and have to defend their thesis. A doctoral degree awarding process requires an intermediate level of linguistic proficiency in two foreign languages.

The three-cycle system allows for lower admittance requirements while making the transfer between programmes a lot easier. Responding to the challenges of having to train a growing number of students, bachelor courses are less specialised and more broadly funded. The new Bologna cycles have a higher efficiency of adaptability to the changing needs of the labour market and are better positioned to meet the purposes of lifelong learning.

Credit system
The European Credit Transfer System (ECTS) is the only existing credit system in Hungary. The ECTS was developed within the framework of European higher educational cooperation and mobility programmes for recognising periods of studies. The ECTS were initially implemented in the academic year 2003/04.

Diploma Supplement
The Diploma Supplement (DS) has been issued by higher education institutions since July 2003. Since 2006 all higher education institutions have provided the document automatically and free of charge in Hungarian and English and/or in the language of an ethnic minority. The DS contains all information about the qualification, the degree programme and a short description of the subjects taught.

Admission
According to the Higher Education Act, admission for Bachelor's degree programmes and some long-term Master's degree programmes is selective. The minimum requirement for admission for these degree programmes is a secondary school leaving certificate or its non-Hungarian equivalent. There are a few exceptions where practical examinations or tests are also required. Higher education studies can be financed either by the state or by the students.

International students wishing to attend a full degree course in Hungary should contact the National Higher Education Admissions Office for more information.

Annual timetable for an average student
Autumn semester

First half of September: registration and signing up for courses
Second half of September to middle of December: term time
Middle of December to beginning of February: exam period

Spring semester

First half of February: registration, signing up for courses
Second half of February to first half of May: term time
Middle of May to beginning of July: exam period

Holidays

Autumn: end of October
Winter: end of December
Spring: Easter week

Links of interest
For more information about Hungarian higher education please visit the following websites:

Ministry of Education and Culture of the Republic of Hungary (http://www.okm.gov.hu/main.php?folderID=181)

National Higher Education Information Centre (http://www.felvi.hu/index.ofi?mfa_id=5)

Hungarian Scholarship Board (http://www.scholarship.hu/static/angol)

Educational Authority (http://www.oh.gov.hu/main.php?folderID=3349)

Hungarian Accreditation Committee (http://www.mab.hu/english/index.html)

Scientific Research

Hungarian Academy of Sciences
(http://www.mta.hu/index.php?id=406&type=0)

The Hungarian Academy of Sciences was established in 1825. According to Act XL of 1994, the Academy is a scholarly public body founded on the principle of self-government, whose main task is the study of science, the publicizing of scientific achievements, and the aid and promotion of research. Its members are the academicians. The Academy, as a public body, is composed of academicians and other representatives of the sciences with an academic degree, who work to solve the tasks of Hungarian science, express their intention to become members of the public body and accept the duties it involves. They exercise their rights through their representatives. The general assembly is the supreme organ of this public body, which is composed of academicians and delegates representing the non-academician members of the public body. The 200 delegates are elected by secret ballot. The general assembly frames its own bylaws, determines its order of procedure and budget, elects its officers (president, vice-presidents, secretary-general, vice-secretary-general), the committees of the general assembly, and the elected members of the presidium.

As the bylaws stipulate, the Academy has eleven sections:

I. Linguistics and Literary Studies Section,

II. Philosophy and Historical Studies Section,

III. Mathematical Sciences Section,

IV. Agricultural Sciences Section,

V. Medical Sciences Section,

VI. Engineering Sciences Section,

VII. Chemical Sciences Section,

VIII. Biological Sciences Section,

IX. Economics and Law Section,

X. Earth Sciences Section,

XI. Physical Sciences Section.

The sections operate committees corresponding to branches of scholarship and special fields of research. The Academy maintains research institutes and other institutions (libraries, archives, information systems, etc.) assisting their work, and extends aid to university research centres. The operation of research institutes is directed by the 30-member Council of Academic Research Centres with the assistance of three advisory boards. The Council of Doctors may confer the Doctor of the Hungarian Academy of Sciences title. The operation of the Academy is financed by the budget, income derived from its assets, and by foundations and donations.

HAS's Research Units

HAS establishes and maintains research institutes in the fields of the natural and social sciences. It also operates such other institutions of learning as libraries, archives, systems of information, etc. as well as it subsidises research groups at universities and public collections. Currently, there are 47 research institutes operated by HAS.

The activities of the research institutes are directed by HAS's Council of Research Units. A body comprising 30 scientists, half its members are elected by HAS's General Assembly, another half by the research units themselves. While directing research, the Council closely co-operates with HAS's scientific sections. Its president is HAS's current General Secretary. The Council of Research Units operates boards of curators in all major sciences.

It is these boards that determine subsidies and investments for all research units after evaluating their activities in close co-operation with HAS's scientific sections and their scientific committees.

HAS's Research Institutes
(http://www.mta.hu/index.php?id=704)

Research Groups
(http://www.mta.hu/?id=710&passpars=index_en.php%3Foffset=0)

Institute for Research Organisation
Address: Nádor utca 18.,Budapest H-1051
Mail address: P.O.B. 994, 1245 Budapest
Tel., fax: (36-1)269-5195, (36-1)331-3161

Main activities:
- Services (scientific, financial and organizational);
- Research in the field of S&T policy;
- Development and operation of databases;
- Publication of studies in the broad fields of research organization and S&T policies.

The Institute was established in 1968 as a special background institution of the Hungarian Academy of Sciences. The staff is responsible both for scientific and administrative activities related to the science policy profile of HAS. Science and innovation policy studies have been made for more than four decades. Accumulated knowledge and expertise in statistics, financing, institutional systems and transformation policies in Hungary and other Central- and Eastern European countries are utilized mainly by the HAS administration, but also by many domestic and foreign organizations (scientific establishments, ministries, offices of statistics, foundations, etc.). Databases of the Institute

are of great significance for science administrators and researchers as well. Just to mention a few of the most popular ones: database of scientists as members of the public-law association of HAS; database of research units all over the country; database of foundations related to research and higher education.

Council of the Research Network
This body directs, comments on, proposes, and decides about HAS's autonomous, subsidised network of research units. Except for 3 members delegated by HAS's Council of Research Units, all other members and substituting members are elected by the research network itself with due consideration given to the structure and staff proportions within the network.
The Council of the Research Network represents subsidised research institutes and other research units by promoting their operation and development. While it closely watches the professional work of the network, it promotes all applications for outside support and safeguards the due distribution of basic resources. With its principled decisions, it assists HAS's Office for Subsidised Research Units in carrying out its central organisational and co-ordinating duties.

International Relations
The international relation activities of the Hungarian Academy of Sciences are supported by three pillars. The first one is the Department of European Scientific Relations which focuses on the European multilateral scientific affairs both in terms of science policy and also different practical issues, with special emphasis on the R&D Framework Programmes of the European Union. This Department also provides the home base for the HunASCO office located in Brussels, which serves as the representation office of HAS to the European Union.
The second pillar is the Office for International Co-operation which deals with the bilateral cooperation programmes of HAS as well as maintains the membership of HAS in different international scientific associations.
The third pillar is the Academic Council of Hungarians Abroad which was set up in order to better involve Hungarian scientists living in Western Europe and overseas into Hungarian-Hungarian scientific cooperation.

Things to know about Hungary

Basic information
Official name: Republic of Hungary
State form: Parliamentary republic
Hungary is a member of OECD, NATO, EU and is a Schengen state.

Area: 93 030 km^2
Population: 10 053 000
Capital and largest city: Budapest (population: 1 700 000)
Neighbouring countries: Austria, Slovakia, Ukraine, Romania, Serbia, Croatia, Slovenia
Climate and weather: Hungary is in the temperate zone, and has a relatively dry continental climate.

Currency: Forint (HUF)
Time zone: CET (GMT +1)

Hungary is one of the 15 most popular tourist destinations in the world with a capital regarded as one of the most beautiful cities in the world. Despite its relatively small size, the country is home to numerous World Heritage Sites (http://english.tpf.hu/pages/content/index.php?page_id=128), UNESCO Biosphere reserves, the second largest thermal lake in the world (Lake Hévíz), the largest lake in Central Europe (Lake Balaton), and the largest natural grassland in Europe (Hortobágy).

Language
The official language is Hungarian, which forms part of the Finno-Ugric language family. Hungarians call their language 'magyar'. Although Hungary is located in Central Europe, Hungarian is not related to any of the languages that surround it. Hungarian is spoken by 10 million people in Hungary. There are also sizable populations of Hungarian speakers in Romania, Slovakia, Serbia, Ukraine, Israel and the U.S. Smaller pockets of Hungarian speakers also live in Canada, Slovenia, Austria and the other countries too.

Hungarian names
In Hungary all names are given with family name first and followed by a given name. So the terms first name and last name are potentially confusing and should be avoided as they do not in this case denote given and family names respectively.