



PROGRAM ANNOUNCEMENT

Aquincum Institute of Technology - Budapest
2011 Spring Semester
February 1 – May 27

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AIT-BUDAPEST

The newly-established Aquincum Institute of Technology (www.ait-budapest.com) provides a unique study abroad experience for US undergraduates majoring in engineering, computer science or related disciplines. Fostering student creativity has been a hallmark of mathematics and science education in Hungary for over a century; John von Neumann, who developed the principles of stored-program digital computers, Andy Grove, longtime leader of Intel, and Charles Simonyi, father of Microsoft Office, all got their start in the schools of Budapest. Following in this inspiring tradition, AIT brings together globally-acclaimed scholars, entrepreneurs and designers to provide an academic program based on small and interactive classes, close collaboration of students and faculty, and hands-on work through group projects.

The main areas covered in AIT's program are IT entrepreneurship, design, software ergonomics and mathematical foundations. AIT also offers a hands-on introduction to cutting edge uses of computers in research (computational biology) and industry (architectural design, navigation, film and media, and others). These are the areas in which achievements of Hungarian researchers and entrepreneurs have been the most remarkable.

AIT's distinguished faculty includes Ernő RUBIK, inventor of Rubik's Cube; network theorist Albert-László BARABASI; inventor Charles SIMONYI (WYSISWYG, Microsoft Office); Wolf Prize recipient mathematician László LOVÁSZ; and software entrepreneur Gábor BOJÁR (founder of Graphisoft, the most successful global software company from Central Europe).

AIT's Advisory Council's founding membership includes representatives from the following institutions:

- Harvard University
- Harvey Mudd College
- Northeastern University
- Franklin W. Olin College of Engineering
- Princeton University
- Rensselaer Polytechnic Institute
- Smith College
- Swarthmore College
- Williams College

BUDAPEST AND AIT CAMPUS

Budapest, Hungary's historic capital is a vibrant European metropolis. Traversed by the famed River Danube and featuring several world heritage sites and architectural treasures, Budapest is one of the world's more beautiful capital cities. Budapest is also a principal cultural destination in Central Europe. It offers a great opportunity to get acquainted with the traditions of a cosmopolitan center known for its innovative and creative spirit.

The AIT campus is located on the banks of a picturesque bend of the Danube, in a state-of-the-art industrial science park hosting the Hungarian headquarters of Microsoft, Apple, SAP, Servier, AMRI, Canon, Graphisoft, Thales Nano and many other high-tech R&D firms from the IT and pharmaceutical industries.

AIT 2011 SPRING SEMESTER PROGRAM ANNOUNCEMENT

Students are invited to participate in AIT's study abroad program by attending a unique semester in Budapest between February 1 – May 27, 2011. Students may take courses in creative computer engineering, design and entrepreneurship; discrete mathematics, computational biology and medicine, and will get immersed in Budapest's cultural and city life.

AIT is affiliated with BME, the Budapest University of Technology and Economics, an internationally acclaimed institution founded in 1782 and the first institute in Europe to train engineers at the university level.

The 2011 Spring Semester offers 19 courses organized in the following three areas:

- Creative Computer Engineering, Design, and Entrepreneurship
- Discrete Mathematics and Theoretical Computer Science
- Advanced Applications in Computational Biology and Medicine

In addition, a diverse range of extracurricular activities are offered for exploring the historic heritage and contemporary cultural life of Budapest and the region.

ACADEMIC PROGRAM AND CREDITS

Classes are taught in English by eminent Hungarian professors, most of whom have had teaching experience in North American universities. In keeping with Hungarian tradition, teachers closely monitor each individual student's progress. Considerable time is devoted to *problem solving* and encouraging *student creativity*. Emphasis is on depth of understanding rather than on the quantity of material. The academic program is based on the philosophy of small and intimate classes, close collaboration of students and faculty, and hands-on work through group projects. In AIT's 2011 Spring Semester the expected total number of students will be 25-35.

Academic courses will meet twice a week, for two hours each time. Hence the 7-week courses typically correspond to 2 credits, and the 14-week courses to 4 credits in most North American colleges. However, credits are subject to acceptance by the sending institutions. Students are expected to select academic courses with an average load of 20-25 contact hours a week. AIT is providing credit transfer in the form of a transcript from the Budapest University of Technology and Economics. Students participate in AIT's program while remaining enrolled at the sending university. Courses may be taken as *Audit*, *Pass/No Credit*, or *Graded*.

In case of sufficient interest, AIT offers optional non-academic courses as well, but not for credit. Some of them (Hungarian history, art, music etc) are free of charge, while language courses are offered by a language school which charges a separate fee.

SCHEDULE

Spring semester starts in the first week of February. An optional intensive language course is offered about two weeks before regular classes begin. Early applications are encouraged.

Deadline for applications:	October 15
Notification of acceptance:	October 29
Arrival for participants of the optional language course:	between January 15, Saturday and January 18, Tuesday
Optional language course begins:	January 19, Wednesday
Optional language course ends:	February 1, Tuesday
Regular arrival:	between January 29, Saturday and February 1, Tuesday
Orientation period:	between February 2, Wednesday and February 4, Friday
Classes of the spring term begin:	February 7, Monday
First half-semester:	between February 7, Monday and March 25, Friday (March 15, Tuesday, national holiday in Hungary – no classes)

Spring recess begins:	March 26, Saturday
Last day of spring recess:	April 3, Sunday
Second half-semester:	between April 4, Monday and May 20, Friday (April 25, Easter Monday – no classes)
Classes of the spring term end:	May 20, Friday
Exams begin:	May 23, Monday
Program ends:	May 27, Friday

TUITION

Tuition fee at AIT is \$13,000 (U.S.) per semester of study. This fee does not include the optional language course, housing, meals and travel. (For these prices please see *Estimated Direct Student Costs*.)

HOW TO APPLY?

In order to apply for AIT consult with your instructor at your home institution first and then follow the instructions on the Application Form. (Application Form for Spring Semester 2011 will be available by June 30th 2010, Monday). If you have any questions, please contact AIT's North American Directors and/or the Budapest Office.

THE CURRICULUM

CREATIVE COMPUTER ENGINEERING, DESIGN, AND ENTREPRENEURSHIP

For students inclined to work as IT entrepreneurs in future, AIT provides a great opportunity to assess their skills and aptitude for business.

Given the fact that the world's most accomplished IT entrepreneurs were trained as engineers rather than business administrators, AIT's approach to entrepreneurship is shaped by the specific characteristics of the IT industry. AIT's courses are taught by Hungary's leading IT entrepreneurs with vast experience in internationally successful companies and software product development. These courses fill important gaps in contemporary IT education by focusing on the importance of user-centered product development, and by fostering cross-cultural skills of development and adaptation.

What's more, Ernő Rubik's contribution provides an exceptional opportunity for students to gain a better understanding of the concept of 3D design both on and off the computer screen.

Courses offered:

Title	Faculty	Duration
Design	Ernő Rubik	weeks 1 – 14
IT Entrepreneurship	Gábor Bojár	weeks 1 – 14
Software usability	Gábor Bojár, Gyuri Juhász	weeks 1 – 14
Cross Cultural IT – Part 1.	Tamás Hajas	weeks 1 – 7
Cross Cultural IT – Part 2.	Tamás Hajas	weeks 8 – 14
Computer Graphics	László Szirmay-Kalos	weeks 1 – 7
Computer Vision for Digital Film Post-Production	Gergely Vass	weeks 8 – 14

All course descriptions will be available by June 30th, 2010.

DISCRETE MATHEMATICS AND THEORETICAL COMPUTER SCIENCE

Students may select one or more courses to deepen their knowledge in the mathematical foundations of informatics. Discrete mathematics, especially graph theory, is one of the basic tools of IT engineers. The world's very first graph theory course was offered at the Budapest University of Technology and Economics some 80 years ago. The lecturer was Professor Dénes Kőnig, author of the first book on graph theory; his students included Pál Erdős, Tibor Gallai, Pál Turán and other pioneers of the subject. Based on this unique tradition, various courses are offered in classical graph theory, in combinatorial optimization, in the theory of computing and in declarative programming.

Courses offered:

Title	Faculty	Duration
Structure and dynamics of complex networks	János Kertész, László Barabási-Albert, Péter Csermely	weeks 1 – 14
The semantic web – making computers understand the web	Péter Szeredi	weeks 1 – 7
Declarative programming	Péter Szeredi	weeks 8 – 14
Graph theory – Part 1.	Gábor Simonyi	weeks 1 – 7
Graph theory – Part 2.	Gábor Simonyi	weeks 8 – 14
Combinatorial optimization – Part 1.	Dávid Szeszler	weeks 1 – 7
Combinatorial optimization – Part 2.	Dávid Szeszler	weeks 8 – 14
Theory of computing Part 1 – Computational models	Gyula Y. Katona	weeks 1 – 7
Theory of computing – Part 2. Complexity	Gyula Y. Katona	weeks 8 – 14
Data mining, Part 1		weeks 1 – 7
Data mining, Part 2		weeks 8 – 14
Algorithms and data structures – Part 1. Basic techniques and data structures	Katalin Friedl	weeks 1 – 7
Algorithms and data structures – Part 2. Graph algorithms, geometric algorithms	Katalin Friedl	weeks 8 – 14

All course descriptions will be available by June 30th, 2010.

ADVANCED APPLICATIONS IN COMPUTATIONAL BIOLOGY AND MEDICINE

We are witnessing a dramatic expansion in the areas of genomics and systems biology, and their immediate interaction with translational research in the pharmaceutical and biotech industries.

Building on early applications of computer science in the field of biology, bioinformatics research requires input from the diverse disciplines of mathematics and statistics, physics and chemistry, and medicine and pharmacology. AIT students interested in bioinformatics will be introduced to this multidisciplinary perspective and its consequences for academic and industrial environments. A key recent development in systems biology is bioinformatics, which is becoming increasingly successful at managing huge amounts of biological data. Consequently, bioinformatics also generates an entirely new application market for computer science and mathematical theories. Computational biology also offers an integrative approach of greatest importance for the biotech and pharmaceutical industries as well. AIT brings internationally-acclaimed scholars in this exciting new field together with professionals and business people committed to industrial/software applications for this cutting-edge research.

Offered courses:

Title	Faculty	Duration
Highlights in experimental biology and medicine	András Falus	weeks 1 – 7
Bioinformatics	Péter Antal	weeks 8 – 14
Advanced algorithms for bioinformatics	István Miklós	weeks 8 – 14
Algorithm and software development in pharma research – Part 1. Information processing in living systems	András Aszódi	weeks 1 – 7
Algorithm and software development in pharma research – Part 2. Scientific software in pharmaceutical research	András Aszódi	weeks 8 – 14
Molecular models and IT technology – Part 1. IT of molecular mechanics and dynamics	Gábor I. Csonka	weeks 1 – 7
Molecular models and IT technology – Part 2. IT of modeling based on electron density and wave functions	Gábor I. Csonka	weeks 8 – 14

All course descriptions will be available by June 30th, 2010.

FURTHER ACTIVITIES

OPTIONAL LANGUAGE COURSE

A 2-week long Hungarian language course is offered for AIT students prior to their studies in AIT. This intensive Hungarian language course is held in downtown Budapest between January 19 – February 1. This is an optional course, not included in AIT's tuition fee. The cost of this optional intensive language class is about \$420 and is payable in the language school upon arrival in Budapest.

FURTHER NON-CREDIT COURSES

During the AIT Semester further non-credit courses (Hungarian history, art, music etc) will be offered. These courses will take place on AIT campus and there is no extra fee charged. List of courses will be available soon.

EXTRACURRICULAR PROGRAMS

Extracurricular programs are generally scheduled in late afternoons and weekends and will be organized so as not to overlap each other. Program offering will be available soon.

PRACTICAL INFORMATION

HOUSING

AIT students are advised to rent pre-approved apartments in the city. Generally, two or three students will share a two-three bedroom apartment. The rental fee is approximately \$400 + utilities per month per person.

All homes will be within easy reach of the university using the frequent and inexpensive public transportation. Program administrators in Budapest will help students with housing and any problems that arise.

MEDICAL SERVICE

All students are required to have health insurance that is valid in Hungary for the length of the program. Please verify that your medical insurance covers you while you are abroad and that you understand the type of costs and extent of coverage provided.

TRANSPORTATION

Budapest has a good transportation system. Buses, trolley-buses, street cars, the subway, and suburban trains run frequently until about midnight. A monthly transportation pass can be purchased for about \$50. Taxi cabs are also affordable, and AIT can arrange regular shuttle service from and to downtown. AIT Campus can be reached in 45 minutes by public transit from any downtown location.

MISCELLANEOUS

All courses will be held at the AIT campus, where canteen for lunch and internet access are also available. The recommended textbooks of the individual courses can be purchased on location or borrowed from the library of AIT.

DIRECT STUDENT COST

Estimated Direct Student Cost in Budapest (for 3 months):

Accommodation	\$ 1,200 (In AIT organized apartments)
Meals	\$ 1,200 – 1,500
Miscellaneous (local transport, utilities, phone, entertainment)	\$ 600 – 1.500
Total direct student cost (excluding international air fare)	\$ 3,000 – 4,200

CONTACTS

NORTH AMERICAN PROGRAM DIRECTORS

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