About KTH

KTH is responsible for one third of Sweden’s capacity for technical research and is the country’s largest organiser of technical/engineering education at university level. KTH education and research covers a broad spectrum – from natural sciences to all branches of engineering plus architecture, industrial economics, urban planning, work science, philosophy and the history of engineering. In addition to the research at KTH schools there are a large number of national and local competence centres located at KTH, as well as research programmes financed by national research foundations.

KTH offers degree courses in architecture, master of science in engineering, bachelor’s degree, master’s degrees (one or two years), licentiate or doctoral degrees. KTH also educates subject teachers for upper-secondary school level. There is a Technical Preparatory course as well as commissioned educational programmes and further education. There are a total of 12,600 full year students at first and second levels, over 1,900 active research students and a little more than 4,800 employees.

KTH was founded in 1827 and its current central campus is at Norra Djurgården in central Stockholm. Other operations are located at AlbaNova close to Roslagsstull, where KTH, together with Stockholm University, arranges education and research within biotechnology and physics. KTH has other operations located on other campuses in the Greater Stockholm area. In the Karolinska Institutet Science Park in Solna there is the Science for Life Laboratory that is operated jointly with Karolinska Institutet and Stockholm University. In Kista in the northern part of Stockholm, the School of Information and Communication Technology (ICT) while in southern Stockholm the School of Architecture and the Built Environment (ABE) has activities in Hanninge. The School of Technology and Health (STH) is located in Flemingsberg where it operates in collaboration with the Karolinska Institutet (KI). The School of Industrial Engineering and Management (ITM) has certain activities located in Södertälje.

KTH carries out extensive international research and educational exchange with universities and university colleges primarily in Europe, USA and Australia as well as countries in Asia. KTH participates actively in the various EU research programmes. Cooperation with Swedish and international development cooperation agencies is also underway. Extensive collaboration has been undertaken with Swedish companies, government agencies and organisations. Strategic cooperation agreements have been concluded with several major companies and with Stockholm County Council.

KTH IN FIGURES 2012

EDUCATION

- Master of Architecture and 15 Master of Science in Engineering programmes
- Master of Science combined with Degree in Education in four different specialities
- 8 Bachelor of Science in Engineering programmes
- 58 Master programmes (two years) and 5 one-year Master programmes
- 4 Bachelor of Science programmes and 1 two-year diploma programme
- Further education, Technical Preparatory Programme
- 12,616 full time students, of which 31 per cent are women and 69 per cent men (including fee-paying students)
- 11,107 annual performance equivalents (including fee-paying students)
- 1,869 active research students (at least 50 per cent activity), of which 30 per cent are women and 70 per cent men

Admissions

- 5,528 new students on the first year of Master of Science in Engineering, Master of Architecture and Bachelor of Science in Engineering programmes plus Bachelor degree programmes and Technical Preparatory Programme, of which 31 per cent are women and 69 per cent men
- 1,715 new students on one and two-year Master programmes, of which 33 per cent are women and 67 per cent men
- 967 students who completed their Master of Science in Engineering studies within a Master programme
- 680 students studying on a one or two-year Master programme at KTH
- 350 newly-admitted students to third level programmes, of which 34 per cent are women and 66 per cent men

Degrees

- 920 Master of Architecture and Master of Science in Engineering degrees, of which 32 per cent were awarded to women and 68 per cent to men
- 321 Bachelor of Science in Engineering degrees, of which 25 per cent were awarded to women and 75 per cent to men
- 1,177 Master (one and two-year) degrees, of which 30 per cent were awarded to women and 70 per cent to men
- 235 doctoral degrees, of which 24 per cent were awarded to women and 76 per cent to men
- 153 licentiate degrees of which 30 per cent were awarded to women and 70 per cent to men

RESEARCH

Primary responsibility for five national strategic research areas (SRAs):

- E-science
- IT and mobile communication
- Transport research
- Production engineering
- Molecular biosciences (Science for life laboratory)

Lead partner in two programme areas within the European Institute of Innovation and technology (EIT)

- InnoEnergy
- ICT Labs

FINANCIAL SITUATION

- SEK 4,214 million in total turnover (of which SEK 266 million transfers)
- SEK 1,025 million level 1 and 2 education
- SEK 987 million research/docudal studies
- External financing (excluding transfers)
- SEK 325 million the Swedish Research Council
- SEK 292 million EU
- SEK 144 million Vinnova
- SEK 119 million Wallenberg Foundations
- SEK 334 million other government agencies
- SEK 427 million other external financing including private funds

EMPLOYEES

- 4,811 employees, the equivalent of 3,542 full time positions, of which 1,258 are women and 2,284 are men
- 299 professors of which 39 are women and 260 are men (including visiting and adjunct professors)
- 240 associate professors of which 52 are women and 188 are men (including assistant professors)

PREMISES

- 261 000 m²
Organisation

KTH MANAGEMENT AND FACULTY

KTH operations are organised into schools. Each school consists of departments, divisions, centres and educational programmes. The schools report directly to the President and are headed by a Dean and a Vice Dean. Each school has a Strategic Council as an advisory body to the Dean on certain issues. There are also School Management Teams.

The University Board supervises all KTH operations and is responsible for ensuring that tasks are properly fulfilled. The Board consists of 15 members – eight external representatives, the President, three teachers and three student representatives.

The President leads operations reporting to the University Board. There is also a Deputy President. The President’s Group deals with strategic educational, research and quality issues and consists of the President, Deputy President, Dean of Faculty, Vice Dean of Faculty, Vice-President for Research, the University Director and a student representative. The KTH Management Group deals with matters concerning all KTH schools and consists of the President, Deputy President, Dean of Faculty, Vice Dean of Faculty, Vice Presidents, University Director, all Deans of Schools and two student representatives.

The Faculty Council represents the entire faculty and bears overall responsibility for issues concerning quality in education, research and collaboration with society. The Faculty Council is also a advisory body to the President. In order to enable and strengthen faculty access to information and influence over processes and decisions there is also a

KTH SCHOOLS WITH OPERATING AREAS

School of Architecture and the Built Environment (ABE)
- Architecture
- Civil and Architectural Engineering
- Urban and Regional Planning
- Built Environment
- Urban Planning
- Urban Design

School of Biotechnology (BIO)
- Biochemistry and Bioprocess technology
- Genetic technology
- Glycoscience
- Protein technology
- Proteomics and Nanobio technology
- Theoretical chemistry and biology

School of Computer Science and Communication (CSC)
- Theoretical computer science
- High performance computing and visualization
- Media technology and interaction design
- Speech, music and hearing

School of Electrical Engineering (EE)
- Electrical engineering
- Fusion and space plasma physics
- Information and communication technology
- Medical engineering and micro systems

School of Industrial Engineering and Management (ITM)
- Energy technology
- Industrial economics and management
- Production engineering
- Industrial product development
- Materials science and engineering
- Applied mechanical engineering

School of Information and Communication Technology (ICT)
- Electronic Systems
- Integrated devices and circuits
- Communication systems
- Materials and nano physics
- Software engineering and computer systems

School of Chemical Science and Engineering (CHE)
- Fibre and polymer technology
- Chemistry
- Chemical engineering

School of Technology and Health (STH)
- Medical Engineering
- Health
- Logistics

School of Engineering Sciences (SCI)
- Aeronautical and vehicle engineering
- Physics
- Solid mechanics
- Mathematics
- Mechanics
- Theoretical physics
- Applied physics

School of Education and Communication in Engineering Science (ECE)
- Library services, language and communications
- Learning
- KTH Education

Trustee Council with the primary task of gaining acceptance for, and communicating, issues of special importance with the KTH faculty. The Faculty Council Education Committee has three main tasks: overall planning of the range of educational programmes at first, second and third levels, managing KTH quality assurance operations and following up programmes as well as managing the general development of KTH bodies of regulations and guidelines. The three primary tasks of the Faculty Council Employment Committee are: promotion matters including their preparation and decisions, preparation and decisions concerning teacher recruitment and management of KTH quality development operations regarding teacher recruitment. The Faculty Council Resource Allocation Committee examines the KTH funds allocation system with special emphasis on resources for education at first and second levels.
President’s preface

The 2012 Management Report shows that much at KTH is moving in the right direction. During the year KTH has continued to grow at around the same pace as over the last few years. Compared with figures from five years ago, revenues have increased by 40 per cent. This has enabled strong growth within most KTH operations.

External revenues have, over the latest five-year period as in 2012, increased more rapidly that government appropriations which is proof positive of KTH’s competitive edge but which, however, also brings certain negative consequences. In 2012 revenues from government appropriations formed 51 per cent KTH total revenues, which can be compared with 56 per cent in 2007. Consequently opportunities for KTH to take its own initiatives decrease, especially as external financiers often require co-financing from KTH.

In 2012 a new Strategic Plan for 2013–2016 was established after a broad discussion round at KTH. The Strategic Plan is characterised by optimism about the future and ambitious objectives. Vision 2027, which was adopted in 2011, was used as guidelines for these activities. One new approach was the formulation of seven overall objectives for KTH.

KTH is not just growing in stature. There are also continuous, intensive quality assurance operations underway which are described in our annual Quality Report. One indication that quality has improved is that, this year, KTH has made great strides upwards in the most important ranking lists. Several factors have contributed to this happy scenario, especially the strong KTH brand.

Another indication of KTH quality is the number of grants received from the European Research Council. KTH has a total of 17 Starting and Advanced Grants which is an extremely good result in comparison with other Swedish and European universities.

Fundraising has intensified during the year. A Campaign Committee consisting of a number of influential people has been formed and the KTH "Case for support" is close to being ready for presentation. Closely linked to fundraising is the development of KTH Alumni activities which, in 2012, has gone very well as concerns number of members and activities, both national and international.

The number of Master of Science in Engineering and Master of Architecture awarded was approximately the same this year as in 2011. However considering the number of admissions, there should be more degrees awarded. In 2012 student flow issues have been high priority. Educational results are followed up on a continuous basis and many activities have been initiated aimed at reversing this trend.

The good news is that the number of applicants to KTH educational programmes continues to rise. In comparison with 2007 the number of first choices to Master of Science programmes has risen by 50 per cent. Increased competition for places should mean that the students who are admitted possess good preconditions to be able to manage their studies, which should also lead to better through flow of students.

2012 was Year 2 of tuition fees for students from outside Europe. The number of fee-paying students increased somewhat in relationship to 2011. However we are a long way away from the admission volume we had before tuition fees were introduced. During the year agreements have been concluded with Chinese universities concerning the admission of fee-paying students. The first pilot project showed positive results and we believe in a strong upward trend over the next few years. Recruitment operations continue to be awarded high priority.

KTH is extremely attractive to incoming exchange students. However, as the Ceiling expenditure amount level for education has been reduced, not all of them can be offered a place. The work of the last two years aimed at stimulating KTH students to take part in exchanges is now beginning to show results.

Doctoral studies programmes continue to grow at KTH as is reflected in the substantial increase of admissions. It is also extremely positive that the number of doctoral students in employment as such has also increased. Large volumes within doctoral studies are fully in line with Vision 2027.

In 2012 a second round of extensive evaluation of KTH research, Research Assessment Exercise (RAE 2012), was undertaken. Certain changes were made in comparison with the same evaluation carried out in 2008. Greater focus was placed on research impact and influence on society. KTH received extremely good assessments across the board.

Results from RAE 2012 have been used to redistribute allocations between the KTH departments. Experience from RAE 2008 showed that KTH research groups take these recommendations very seriously and that changes are made at school and department level. This is probably the aspect of the evaluations that has the greatest impact.

In the autumn of 2012 the Government presented its Research and Innovation Bill for 2013–2016. Generally this bill is assessed as being very positive for KTH. Specially interesting is the major investment made in the Science for Life Laboratory (SciLifeLab) as a national resource. SciLifeLab is the result of cooperation within biomedical engineering and other subjects between KTH, Karolinska Institutet, Stockholm and Uppsala universities. KTH is the host university for SciLifeLab.

The work of strengthening KTH collaboration with society has continued in an intensive fashion in 2012. Strategic partnerships have been formed with five partners and more are in the pipeline. Continuous dialogues at management level will be carried out concerning long-term education and research issues. A structure for collaboration with partners at various levels, from small-scale companies to global organisations, has also been established.
The work of strengthening collaboration with the society around us also includes increasing the mobility of researchers and teachers between KTH and other actors. We can now see a clear increase in the number of adjunct professors at KTH. In 2012 the position entitled affiliated faculty has been introduced to use as an instrument to recruit people at a level under adjunct professor to work part time at KTH as teachers or researchers. I look forward to strong growth of this category of employees over the next few years.

KTH is well equipped to face the next few years. I am convinced that we possess good preconditions to continue the positive development trend of the last few years.

Peter Gudmundson
Recruitment goals

The overall goal for recruitment activities is to interest young people in the educational programmes offered at KTH. Target groups are primarily young people at upper secondary schools, adult education students and individuals who have begun their careers. In addition, KTH works long term with children in the ordinary school. KTH has established a communications platform aimed at promoting and broadening the KTH student recruitment base. This platform states what KTH should communicate to possible future students and forms the basis of the activities and measures planned or underway aimed at achieving goals such as a better gender balance, recruitment less skewed as concerns social groupings and the stimulation of diversity as concerns ethnicity.

Universities are playing an increasingly important role in social development, consequently they should reflect the diversity of that society. Broader recruitment is something that KTH actively emphasises in each new recruitment year. Operations include extensive activities and meetings with possible future students with different backgrounds, genders, home towns, ethnicity, disabilities etc.

Recruitment activities

Recruitment activities have prioritised face-to-face meetings between representatives of KTH and possible future students. These activities are primarily carried out by around 40 student ambassadors. Student ambassadors represent most of the KTH educational programmes and campuses and they are chosen with great care for their ability to inspire young people. Student ambassadors reflect the diversity at KTH as concerns gender, geographical origin, ethnicity and social background.

Cooperation with schools and upper secondary schools

In order to encourage more children and young people to become interested in technology and engineering, KTH organises activities for them. Upper secondary school students and their teachers gain access to KTH competence and equipment in various ways, for example through lectures, courses, theme work or lab work. Via KTH’s website, upper secondary school students are offered projects within areas where KTH is able to provide knowledge and support. This gives the school students the opportunity to gain in-depth knowledge of subjects and brings them into closer contact with higher education.

In the autumn of 2009, together with Tensta Upper Secondary School, KTH initiated a project aimed at introducing KTH to students specially interested in architecture and the built environment and who come from an area where KTH generally recruits relatively few students. The course entitled "Introduction to architecture" is a post-upper secondary school course that is to act as a natural link to studies and work with the aim of countering the current, socially biased recruitment to architecture studies at KTH.

The House of Science is operated by KTH and Stockholm University with the primary aim of increasing the interest level of young people in technology and the natural sciences. The youngsters carry out experiments and laboratory exercises in these fields. The House of Science is also the host of a number of other initiatives with the same goal for example “Technology Year 8”, "Research Friday" and "First lego league". The House of Science receives approximately 40,000 visitors every year.

New admissions to KTH educational programmes

Admission to all KTH programmes is carried out through nationally coordinated services provided by the NyA Admissions System. This system is managed by VHS, the Swedish Agency for Higher Education Services.

In 2012 a total of 2,551 (2,529) students began in Year 1 of one of KTH’s traditional educational programmes, of which 1,875 (1,866) began on the Master of Architecture and Master of Science in Engineering programmes and 676 (680) on the Bachelor of Science in Engineering programmes. In addition 866 (804) students began their studies in the preparatory technical programmes.

KTH Bachelor degrees in 2012 saw 161 (149) new students. The two-year university courses in Construction Technology had a total of 42 (49) new students. The University Board had previously taken a decision concerning a new educational structure for the five-year programmes which meant that the final two years of the Master of Architecture and Master of Science in Engineering programme became stand-alone Master programmes. Consequently, since 2011 all Architecture and Master of Science in Engineering students who begin Term 7 are counted as first year students on a Master programme.

A total of 1,574 (1,210) new students began two-year Master programmes of which 967 (657) had previously been registered in Term 6 of a Master of Science in Engineering programme and 141 (130) began a one-year Master programme. The majority of these programmes use English as their language of instruction. Of the new students on the one and two-year Master programmes, 188 (170) were fee-paying and 70 (83) had been granted scholarships. Please read more in the Internationalisation section.

In addition to the new students in Year 1, 238 (144) new students began at a later stage of KTH Master and Bachelor of Science in Engineering programmes in 2012. There are also opportunities to begin during later stages of one and two-year Master programmes which 137 (90) new students did.

Of the new students at KTH in 2012, 32 per cent were women. Of new students on the Master of Architecture and Master of Science in Engineering programmes in 2012, 32 (33) per cent were women. However distribution between the various KTH programmes varies widely. On certain KTH programmes the proportion of women stu-
# Total Number of New Students and Proportion of Women in This Group 2009–2012

<table>
<thead>
<tr>
<th>Master of Science in Engineering and Master of Architecture, Degree Programme 300 HE credits</th>
<th>2012</th>
<th>2011</th>
<th>2010</th>
<th>2009</th>
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<tbody>
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<td><strong>Total number of women</strong></td>
<td><strong>Total number of women</strong></td>
<td><strong>Total number of women</strong></td>
<td><strong>Total number of women</strong></td>
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<tr>
<td>Architecture</td>
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<td>Biotechnology</td>
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<td>41</td>
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<td>Computer Science and Engineering</td>
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<td>181</td>
<td>192</td>
<td>175</td>
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<tr>
<td>Design and Product Realisation</td>
<td>112</td>
<td>109</td>
<td>109</td>
<td>111</td>
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<tr>
<td>Electrical Engineering</td>
<td>72</td>
<td>61</td>
<td>65</td>
<td>62</td>
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<tr>
<td>Energy and Environment</td>
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<td>73</td>
<td>53</td>
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<tr>
<td>Vehicle Engineering</td>
<td>111</td>
<td>111</td>
<td>104</td>
<td>118</td>
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<tr>
<td>Industrial Engineering and Management</td>
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<td>147</td>
<td>142</td>
<td>143</td>
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<tr>
<td>Information and Communication Technology</td>
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<td>Chemical Science and Engineering</td>
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<td>84</td>
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<td>Mechanical Engineering</td>
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<td>152</td>
<td>142</td>
<td>141</td>
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<tr>
<td>Materials Design and Engineering</td>
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<td>Medical Engineering</td>
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<td>Media Technology</td>
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<td>Civil Engineering and Urban Management</td>
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<td>Engineering Physics</td>
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<td>Open entrance</td>
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<td><strong>SUB-TOTAL</strong></td>
<td><strong>1,875</strong></td>
<td><strong>1,866</strong></td>
<td><strong>1,814</strong></td>
<td><strong>1,872</strong></td>
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<tr>
<th>Bachelor of Science in Engineering, Degree programme 180 HE credits</th>
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<td><strong>Total number of women</strong></td>
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<tr>
<td>Constructional Engineering and Design</td>
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<td>Computer Engineering</td>
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<td><strong>SUB-TOTAL</strong></td>
<td><strong>676</strong></td>
<td><strong>656</strong></td>
<td><strong>647</strong></td>
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<tr>
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<td><strong>Total number of women</strong></td>
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<td><strong>Total number of women</strong></td>
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<tr>
<td>Masters programmes 120 HE credits</td>
<td>1,574</td>
<td>1,210</td>
<td>1,327</td>
<td>1,374</td>
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<td>- of which within Master of Science in Engineering programmes</td>
<td>967</td>
<td>657</td>
<td>657</td>
<td>29</td>
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<td>Masters programmes 60 HE credits</td>
<td>141</td>
<td>130</td>
<td>163</td>
<td>273</td>
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<tr>
<td><strong>SUB-TOTAL</strong></td>
<td><strong>1,715</strong></td>
<td><strong>1,340</strong></td>
<td><strong>1,490</strong></td>
<td><strong>1,647</strong></td>
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<td><strong>Total number of women</strong></td>
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<td>161</td>
<td>149</td>
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<th>TECHNICAL PREPARATORY YEAR, TECHNICAL PREPARATORY SEMESTER</th>
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<td><strong>Total number of women</strong></td>
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<td>816</td>
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<td><strong>Total number of women</strong></td>
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<th>TOTAL</th>
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<th>2009</th>
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<td><strong>Total number of women</strong></td>
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<td><strong>Total number of women</strong></td>
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<td>5,285</td>
<td>4,922</td>
<td>4,973</td>
<td>5,156</td>
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</table>

Source: Ladok

Students has exceeded 40 per cent for several years (Master of Architecture, Master of Science in Engineering programmes in biotechnology, design and product realisation and environment plus medical engineering). The new students on the Bachelor of Science in Engineering programmes consisted of 23 (41) per cent women and on the one and two-year Master programmes the proportion was 33 (32) per cent. Bachelor degree courses saw 43 (40) per cent women and the two-year diploma courses 26 (38) per cent.
Student commitment to gender equality, diversity and equal opportunity issues is continuously strengthened via support to MALVINA (the student women’s association) and Gay-tech. In 2012 MALVINA took a decision to hold a gender equality week every year and invite both students and employees to take part.

The median age for first year students on the Master of Architecture and Master of Science in Engineering programmes in 2012 was 20 for both women and men. For new students on the Bachelor of Science courses the median age was 21 and for one and two-year Master programmes it was 24. For Bachelor degrees and the Technical Preparatory Programme median age was 21 for both genders. The two-year diploma courses welcomed new students whose median age was 22 (22 for women and 21 for men). This is, generally speaking, the same level as in 2011.

**Alternative selection**

In a pilot study in 2011 and 2012, KTH has used a maths and physics test (MaFy) to allocate places on the Master of Science in Vehicle Engineering and Engineering Physics programmes and for the newly-started Bachelor degree in Simulation Engineering and Virtual Design programme. This test is administered in cooperation with Chalmers who have used the test as a selection model for admissions to certain engineering programmes since 2007. MaFy aims to examine if this is a selection instrument that KTH can use to identify future students who possess good preconditions to succeed in their studies. A maximum of one third of the places in these programmes can be allocated to applicants who have passed the MaFy test. The minimum pass result in MaFy must have been achieved in order to use this qualification route. For the two years the study has been underway 41 and 20 students have been admitted from the MaFy selection group to Technical Physics and 4 and 1 students to Vehicle Engineering.

**FIRST AND SECOND LEVEL ACADEMIC PERFORMANCE**

**Degrees**

In the KTH Strategic Plan for 2009–2012, the through-flow objective for Master of Science in Engineering programmes is expressed as proportion of students registered in Term 3 who have graduated after a period of eight years. This percentage was to increase from approx. 70 per cent in 2008 to 75 per cent in 2012. During this period extensive measures have been taken to be improve the measurement and analysis of student through flow. Given this situation it is difficult to relate to the objectives stated in the Strategic Plan 2009–2012. The overall assessment is that through flow has, during the period, remained at a level which is too low but that a slight upward trend can be distinguished.

Another Strategic Plan objective was that an academic introduction was to be integrated into all educational programmes at first level. In 2012 KTH initiated activities aimed at establishing an Academic Resource Centre (ARC).

Its operations will be aimed at increasing student through flow, improving the quality of studies and improving student quality of life and opportunities to complete their studies at the appointed time. Such operations already existed on a smaller scale in the form of language workshops, search workshops and career support which will now all be integrated into ARC.

In 2012 a total of 920 Masters of Architecture and Masters of Science in Engineering graduated as compared to 928 in 2011. In 2012 the number of degrees issued that encompassed 300 higher education credits was 340 which was double the number awarded in 2011. There were 4 Master of Architecture degrees encompassing 300 higher education credits issued in 2012 which was somewhat lower than the previous year.

The KTH objective for the number of Masters of Science in Engineering degrees, as established in each school’s operating instructions, is at least 4,660 for the period 2009–2012. Results for the period were 3,666 degrees which is 78 per cent of the objective. In addition 321 (29%) Bachelor of Science in Engineering have graduated as well as 68 (34) people who were awarded university diplomas.

During this year 1,056 (708) two-year Master degrees and 83 (13) one-year Master degrees were awarded. Of the students who were awarded a Master degree this year, 154 have also graduated as a Master of Science in Engineering.

The number of Bachelor degrees continues to increase from the previous year, KTH has awarded 47 (23) such degrees in 2011. Of these 192 (93) have been awarded to students on Master of Science in Engineering programmes and 95 to students on the Architecture programme.

There were 32 (32) per cent women in the graduating group of Masters of Architecture and of Science in Engineering (men 68 (68) per cent). Among graduates from one and two-year Master programmes there were 30 (33) per cent women and 70 (67) per cent men. Bachelors of Science
Performances

In 2011, there were a total of 12,377 statefunded, fullyear equivalent students and 30,895 fullyear equivalent performances in first and second level education. Of the total number of fullyear equivalent students, 91 per cent were studying engineering or natural sciences. Performance rate for KTH programmes at first and second levels was 88 (84) per cent this year. Performance rate for Master of Science in Engineering and Master of Architecture courses was 91 (87) per cent, while the rate for Bachelor of Science programmes was 88 (85) per cent. Performance rate for master courses (one-year and two-year) was 89 (85) per cent. One explanation for the increase in performance rate is that all examinations for the autumn term were held in December 2012, while examinations 2011/2012 were divided between December and January. In addition to the state-funded performances, fee-paying students have generated 239 (67) full year equivalent students and 212 full year equivalent performances in 2012. Performance rate was 89 per cent.

One objective stated in the KTH Strategic Plan for 2009–2012 was that the proportion of women registering for Bachelor, Master of Science in Engineering and Master of Architecture programmes in 2012 would be at least 35 per cent. No individual programme would have less than

<table>
<thead>
<tr>
<th>Degree of Master of Architecture</th>
<th>Total number of women</th>
<th>2012</th>
<th>2011</th>
<th>2010</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>270/300 HE credits</td>
<td>82 52%</td>
<td>78 67%</td>
<td>86 64%</td>
<td>76 55%</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Degree of Master of Science in Engineering 270/300 HE credits</th>
<th>Total number of women</th>
<th>2012</th>
<th>2011</th>
<th>2010</th>
<th>2009</th>
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<tbody>
<tr>
<td>Biotechnology</td>
<td>51 67%</td>
<td>43 70%</td>
<td>44 50%</td>
<td>36 64%</td>
<td></td>
</tr>
<tr>
<td>Engineering and Education</td>
<td>19 63%</td>
<td>26 38%</td>
<td>14 43%</td>
<td>10 70%</td>
<td></td>
</tr>
<tr>
<td>Computer Science and Engineering</td>
<td>68 4%</td>
<td>56 13%</td>
<td>72 8%</td>
<td>55 7%</td>
<td></td>
</tr>
<tr>
<td>Design and Product Realisation</td>
<td>62 47%</td>
<td>55 42%</td>
<td>79 47%</td>
<td>46 48%</td>
<td></td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>54 11%</td>
<td>67 12%</td>
<td>80 16%</td>
<td>81 16%</td>
<td></td>
</tr>
<tr>
<td>Vehicle Engineering</td>
<td>84 7%</td>
<td>64 16%</td>
<td>87 8%</td>
<td>75 11%</td>
<td></td>
</tr>
<tr>
<td>Industrial Engineering and Management</td>
<td>70 26%</td>
<td>76 22%</td>
<td>125 35%</td>
<td>103 31%</td>
<td></td>
</tr>
<tr>
<td>Information and Communication Technology</td>
<td>19 11%</td>
<td>28 13%</td>
<td>26 8%</td>
<td>36 6%</td>
<td></td>
</tr>
<tr>
<td>Chemical Science and Engineering/Chemistry and Chemical Engineering</td>
<td>54 41%</td>
<td>51 67%</td>
<td>82 57%</td>
<td>44 52%</td>
<td></td>
</tr>
<tr>
<td>Surveying</td>
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<td>5 20%</td>
<td>13 54%</td>
<td>18 44%</td>
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<tr>
<td>Mechanical Engineering</td>
<td>79 16%</td>
<td>85 20%</td>
<td>144 15%</td>
<td>131 15%</td>
<td></td>
</tr>
<tr>
<td>Materials Design and Engineering</td>
<td>23 26%</td>
<td>19 11%</td>
<td>39 28%</td>
<td>29 31%</td>
<td></td>
</tr>
<tr>
<td>Materials Engineering</td>
<td>2 0%</td>
<td>3 0%</td>
<td>7 14%</td>
<td>8 25%</td>
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<tr>
<td>Medical Engineering</td>
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<td>1 100%</td>
<td>1 100%</td>
<td>1 100%</td>
<td></td>
</tr>
<tr>
<td>Media Technology</td>
<td>19 37%</td>
<td>48 23%</td>
<td>26 35%</td>
<td>18 33%</td>
<td></td>
</tr>
<tr>
<td>Microelectronics</td>
<td>10 10%</td>
<td>11 18%</td>
<td>16 19%</td>
<td>13 8%</td>
<td></td>
</tr>
<tr>
<td>Civil Engineering and Urban Management</td>
<td>130 48%</td>
<td>125 41%</td>
<td>124 47%</td>
<td>88 42%</td>
<td></td>
</tr>
<tr>
<td>Engineering Physics</td>
<td>76 25%</td>
<td>73 15%</td>
<td>89 19%</td>
<td>70 14%</td>
<td></td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>10 30%</td>
<td>13 23%</td>
<td>20 40%</td>
<td>20 45%</td>
<td></td>
</tr>
<tr>
<td>not within programme/specialisation</td>
<td>4 25%</td>
<td>2 100%</td>
<td>2 100%</td>
<td>2 100%</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Degree of Bachelor of Science in Engineering 180 HE credits</th>
<th>Total number of women</th>
<th>2012</th>
<th>2011</th>
<th>2010</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>321 25%</td>
<td>250 24%</td>
<td>258 32%</td>
<td>259 24%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of Master of Science 240 HE credits</td>
<td>33 30%</td>
<td>43 40%</td>
<td>74 30%</td>
<td>184 24%</td>
<td></td>
</tr>
<tr>
<td>Degree of Master of Science 120 HE credits</td>
<td>1,056 29%</td>
<td>708 31%</td>
<td>686 32%</td>
<td>495 28%</td>
<td></td>
</tr>
<tr>
<td>Degree of Master of Science 60 HE credits</td>
<td>83 41%</td>
<td>123 40%</td>
<td>126 32%</td>
<td>66 38%</td>
<td></td>
</tr>
<tr>
<td>Master Degree 90 HE credits</td>
<td>5 60%</td>
<td>5 40%</td>
<td>12 33%</td>
<td>31 35%</td>
<td></td>
</tr>
<tr>
<td>Degree of Bachelor of Science 180 HE credits</td>
<td>347 39%</td>
<td>233 40%</td>
<td>192 42%</td>
<td>117 48%</td>
<td></td>
</tr>
<tr>
<td>University Diploma 120 HE credits</td>
<td>68 49%</td>
<td>34 47%</td>
<td>60 68%</td>
<td>53 43%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Ladok
10 per cent women. For Master of Science in Engineering and Architecture programmes 32 per cent women were registered in 2012, the same proportion as in 2011. This percentage varies widely from subject to subject. More than half the programmes had more than 35 per cent women and there was no programme with less than 10 per cent. For Bachelor of Science programmes, the proportion of women was 23 per cent, the same as in 2011.

**Bridging courses between upper secondary school and university**

In 2012, KTH has continued to offer Internet-based courses aimed at bridging the gap between upper secondary school and university to technical and natural science course applicants. The aim is to support university first year students and facilitate the transfer from upper secondary to university levels. KTH cooperates with several other universities and university colleges as concerns the mathematics bridging course. Students are registered and graduate from the universities they apply to. These preparatory courses in mathematics were joined by 1,687 (907) students. In 2012 KTH also offered bridging courses in other subjects such as physics, chemistry and computer engineering. KTH had a total of 2,374 (2,537) participants.

**Technical Preparatory Programme**

This programme is a one-year qualifying course aimed at students who have not fully achieved the necessary qualifications for KTH programmes in upper secondary school. The Technical Preparatory Year encompasses two terms and provides additional training at upper secondary school level in mathematics, physics and chemistry. It is also possible to study only one term of this year which is suitable for students who undertook the technical programme at upper secondary school. Passing the Technical Preparatory year or term guarantees the student a place on one of KTH’s Master or Bachelor of Science in Engineering programmes. KTH also provides a Technical Preparatory year in combination with a Bachelor of Science in Engineering specialising in Medical Engineering or Bachelor of Science in Engineering in combination with Economics.

Of those who began the Technical Preparatory Programme in the autumn term of 2011 or the spring term of 2012, 44 (44) per cent or a total of 347 students (29 per cent women, 71 per cent men) continued on to a KTH Master of Science in Engineering or a Bachelor of Science programme in 2012.

In 2012, 816 students enrolled on the Technical Preparatory Programme, compared with 804 the previous year. Women accounted for 33 (28) per cent of new students and 67 (72) per cent were men. Results for 2012 are 634 (596) full year student equivalents and 457 (422) full year performance equivalents.

**STUDENT INFLUENCE AT PÅ KTH**

The University Board took a decision in the spring of 2010 that the Royal Institute of Technology Student Union, THS, would be allocated the position of student union for the entire university from 1 July 2010 until 30 June 2013. KTH and THS have cooperated for a considerable period of time and students are represented in all KTH’s decision-making bodies and almost all preparatory and working groups. These include, for example, the University Board, Faculty Council, KTH Management Group, programme commit-
ttees, appointments committees, the Disciplinary Board, School Councils and working groups for various studies. In the future (THS) will continue to appoint representatives to the various committees and boards. In the experience of the university, the Student Union selects students representing different areas of KTH and, as far as possible, also those who reflect the social, ethnic and cultural diversity of the university.

Another vital activity that KTH and THS cooperate on is the annual reception of new students. These reception activities are organised by older students together with the relevant staff in the various educational programmes and are implemented in cooperation with the sections of the Student Union. During the last few years, special efforts have been made to develop reception activities for international students. For this and next year the primary theme will be Diversity with special attention being paid to a message of zero tolerance of discrimination and harassment.

EDUCATION AT THIRD LEVEL
The objectives of KTH third level programmes are to provide society with qualified, independent researchers who are able to contribute to sustainable social development.

Recruitment
In 2012 KTH carried out coordinated advertisement of research places in the daily press on five different occasions. The objective was to increase KTH visibility and interest in KTH as a place for work or study. Interest in research studies continues to increase. During the year 149 (333) doctoral positions were advertised. Applications numbered 6,639 (4,963), 19 (14) per cent women and 81 (86) per cent men. In addition to doctoral positions, 7 (58) educational grants were advertised with 165 (357) applicant of which 28 (41) per cent were women and 72 (89) per cent men. From 1 July 2012 KTH will not, according to President’s decision, supply any new educational grants.

Recruitment to third level doctoral studies also takes place without advertisement. This concerns scholarship holders, doctoral students who are financed via cooperation with industry and those who arrive via the various educational cooperation programmes. Many would-be applicants contact KTH directly via e-mail, for example, and are generally referred to the coordinated advertising programme. Admissions
Doctoral studies at KTH are extremely attractive. Applications for doctoral studies at KTH far exceed resources. High levels of competition for places should promote quality. In 2012, 420 doctoral students were admitted as compared to 350 in 2011. For those who could not be admitted, lack of funding for studies was given as the reason in almost all cases although lack of supervisors was also stated. Of the firstyear doctoral students, 17 per cent were admitted to take a licentiate degree. Of 42 (38) new doctoral students, 33 per cent of the women and 67 per cent of the men have their primary operations outside the university and are taking their doctorates within the framework of their employment at, for example, a company or government agency (industrial doctoral students). Of those admitted to doctoral level studies in 2012, 33 (45) per cent or 139 (155) were KTH graduates. The most common degree was a Master which is new for 2012. Previously the largest group had Master of Science in Engineering. Of those holding KTH degrees, 62 (48) per cent held a Master degree and 29 (52) per cent a Master of Science in Engineering or Master of Architecture and 9 per cent a Bachelor degree. Four years ago in 2008, for the KTH graduate group, the situation was the reverse and 62 per cent had a Master of Science in Engineering and 36 per cent a Master.

The proportion of newly admitted research students with a foreign educational background has increased as compared to 2011. Of the new students in 2012, 46 (38) per cent graduated in a country other than Sweden.

Measures to achieve gender balance
In the KTH Strategic Plan for 2009–2012, it is stated that the percentage of women registered on doctoral studies for 2012 will be 35 per cent. In 2012 the proportion of women in this group amounted to 34 per cent which is an increase on 2011 and on the years previous. The percentage of women in the entire third level student body was 29 per cent, the same as in the previous year. The Strategic Plan also stated that no programme would have less than 10 per cent women. In 2012, only one subject area had less than 10 per cent women. In 2012, only one subject area had less than 10 per cent women.
cent women registered. KTH continues with information activities and networking in order to increase the recruitment of female students at third level. In some subjects such as Chemistry, Chemical Engineering and Biotechnology, where the percentage of female students at first and second levels is high, the corresponding proportion of women in doctoral studies is also high. However certain subjects and research groups continue to show low levels of women students.

**Financing of studies**

Of the 2,160 students registered for doctoral studies at KTH in 2012, 1,869 students have been active to at least 50 per cent and 2,127 to at least ten per cent. In 2012 salaried research places continued to be the dominant form of financing of doctoral studies. By the end of the year approximately 1,138 or 58 (53) per cent of KTH students at research level were using this form of financing, part time or full time. This group consisted of 31 per cent women and 69 per cent men. Educational grants form another type of study financing that has been used to a limited extent. At the end of 2012, 5 per cent of doctoral students (57 women and 62 men) were using this form of financing part time or full time. From 1 July 2012, no new educational grants will be awarded at KTH, consequently the share of doctoral students with this form of financing will fall rapidly.

The remaining doctoral students support themselves in other manners: 14 per cent through employment linked to their programme (industrial doctoral students), 5 per cent through another position at a university and 16 per cent through part time or full time scholarships. Seven per cent finance their studies, part time or full time, in some other fashion.

**Doctoral programmes and graduate schools**

In the KTH Strategic Plan for 2009–2012, third level studies are to be organised in doctoral programmes. These were established in 2011 and they are currently 29 in number. All new doctoral students are admitted to a doctoral programme. These are cohesive educational structures including one or several graduate subjects in which more extensive supervisory capacity and financing basis guarantees a long-term, robust educational environment. The doctoral programmes may involve one or several schools within KTH and provide opportunities to collaborate between educational fields in order to provide a broader range of courses and a wider perspective for thesis activities. This also provides doctoral students with opportunities to be part of a larger student group and to participate in joint programme activities in order to develop better social cohesion within educational programmes.

The doctoral programmes also provide greater opportunities for working with complementary skills which is another of the objectives set out in the KTH Strategic Plan. KTH currently participates in ten or so cooperation projects with other universities and/or industry in the form of graduate schools. A graduate school is defined as a cohesive programme with participation by KTH and a partner university. Graduate schools often enjoy external financing and a pre-determined lifetime. They may also be based on a broader, cross-disciplinary platform.

**Degrees**

In 2012, 235 (239) doctors and 153 (190) licentiates graduated. Of the doctorates awarded in 2011, 24 (26) per cent went to women and 76 (74) per cent to men and concerning licentiate degrees 30 (31) per cent were awarded to women and 70 (69) per cent to men. The KTH objective for the period 2009–2012, as stated in each school’s operating instructions, is 900 third level degrees. The number of degrees is calculated so that the total number of degrees per person never exceeds 1.0. A doctoral degree is consequently counted as 1.0, a licentiate degree as 0.5 and a doctorate that has been preceded by a licentiate degree as 0.5. In 2012, 257 (249) such degrees were awarded which means 941 for the four-year period. The goal has been achieved.

At KTH, it is common to graduate as a licentiate as a stage in doctoral studies and a natural review of studies completed. Of the doctors graduating in 2012, 46 per cent had previously earned a licentiate degree. A Licentiate of Engineering degree is also very relevant for employment in industry. KTH has taken a decision to initiate a pilot project consisting of a two-year, industrially-based third level educational programme which will be concluded with a licentiate degree.

Calculations of the period required by students to conclude their third level degrees show that the gross study period for a PhD was 5.5 years in 2012, which is somewhat longer than the previous year. This is the same for women and men. The net study period has also increased slightly to 4.3 years. The net study period for women is slightly longer than for men. For those who earn a licentiate degree the gross study period is 3.5 years the same as the previous year. The same period for women and men. The net study period is 2.8 years, the same as the previous year and is again longer for women than for men. Calculations of study periods are carried out according to the routines supplied via Ladok, the study documentation system.

**COOPERATION WITHIN EDUCATIONAL PROGRAMMES**

**Master of Science and Degree in Education**

KTH is continuing to develop and cooperate with Stockholm University in combined engineering and teacher training programmes, collaboration that has been underway since 2002. In that all educational institutions were required in 2010 to reapply for the rights to issue degrees in education, KTH and Stockholm University agreed that KTH would apply for their own licence. KTH’s application was approved and the programme began in the autumn term of 2011 in a new form where synergies between the two pro-
grammes have been further developed and in which the education degree as subject teacher is also issued by KTH. The first year is common to all students but in Year 2 students choose one of four specialisations: mathematics and physics, mathematics and chemistry, mathematics and technology/IT or mathematics and engineering/energy and the environment. The programme leads to Master of Science in Engineering and an Education Degree as a subject teacher at upper secondary school level.

Interest in teacher education in physics, chemistry and engineering is very low nationally. KTH’s combination programme has, over the years, enjoyed a stable application rate and with its 66 first choice applicants in the autumn of 2012 is the dominant national programme in these fields. This programme is therefore crucial to the future supply of teachers for science and technology programmes in upper secondary schools. As the programme also provides degrees both an engineer and a teacher, this reduces sensitivity to fluctuations in the labour market. In the autumn term of 2012, 50 students began on the programme. The proportion of women among new students in the programme is 40 per cent. In 2012, 19 students graduated from the programme.

Technical subjects in education for school teachers
Technical subjects in Stockholm teacher education have now found their natural location in the KTH School of Education and Communication in Engineering Science. Here teaching
courses in technical subjects are conducted for the Stockholm University programmes for all primary and secondary grades as well as pre-school. In June 2012 KTH was granted the right to issue qualifications to subject teachers in Grades 7–9 as regards technical subjects. A new education degree, Subject Teacher grades 7–9 (Technology) will consequently start up at KTH in the autumn of 2013. This programme will be run in collaboration with Stockholm University.

### Figure 8

#### Licentiates and Doctorates 2009–2012

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2011</th>
<th>2010</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Licentiate degrees per research field</strong></td>
<td>Total</td>
<td>number of women</td>
<td>Total</td>
<td>number of women</td>
</tr>
<tr>
<td>Biological Sciences</td>
<td>4</td>
<td>25%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Computer and Information Science</td>
<td>2</td>
<td>0%</td>
<td>8</td>
<td>50%</td>
</tr>
<tr>
<td>Electrical Engineering, Electronic Engineering, Information Engineering</td>
<td>36</td>
<td>25%</td>
<td>27</td>
<td>30%</td>
</tr>
<tr>
<td>Philosophy, Ethics and Religion</td>
<td>1</td>
<td>0%</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>Physical Sciences</td>
<td>5</td>
<td>40%</td>
<td>6</td>
<td>17%</td>
</tr>
<tr>
<td>Health Sciences</td>
<td>3</td>
<td>33%</td>
<td>2</td>
<td>0%</td>
</tr>
<tr>
<td>Industrial Biotechnology</td>
<td>3</td>
<td>33%</td>
<td>3</td>
<td>33%</td>
</tr>
<tr>
<td>Chemical Sciences</td>
<td>1</td>
<td>0%</td>
<td>1</td>
<td>0%</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>12</td>
<td>58%</td>
<td>17</td>
<td>35%</td>
</tr>
<tr>
<td>Arts</td>
<td>2</td>
<td>0%</td>
<td>2</td>
<td>50%</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>27</td>
<td>26%</td>
<td>18</td>
<td>11%</td>
</tr>
<tr>
<td>Mathematics</td>
<td>4</td>
<td>25%</td>
<td>3</td>
<td>33%</td>
</tr>
<tr>
<td>Materials Engineering</td>
<td>23</td>
<td>13%</td>
<td>31</td>
<td>29%</td>
</tr>
<tr>
<td>Medical Engineering</td>
<td>1</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Environmental Biotechnology</td>
<td>8</td>
<td>75%</td>
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</tr>
<tr>
<td>Environmental Engineering</td>
<td>21</td>
<td>38%</td>
<td>25</td>
<td>36%</td>
</tr>
<tr>
<td>Other Engineering Technologies</td>
<td>0</td>
<td>0%</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>153</td>
<td>30%</td>
<td>150</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Doctorates per research field</strong></th>
<th>2012</th>
<th>2011</th>
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Source: Ladok
Cooperation within medical engineering

KTH undertakes, through its School of Technology and Health, close cooperation with Karolinska Institutet (KI). Cooperation occurs within the framework of Bachelor of Science programmes, Master of Science in Engineering programmes and Master of Medical Engineering programme. In 2012 cooperation between KTH and KI has moved forward again through the planning of a common programme at doctoral studies level which will lead to a joint degree. A doctoral programme has been established at KTH within medical engineering and this will be included in this cooperation programme. An agreement between KTH and KI has been developed in 2012. This will be finalised during the spring of 2013. Also in cooperation with KI, for the first time a further education course in medical engineering has been implemented aimed at patient safety. The course was commissioned by Stockholm County Council (SLL).

An educational programme in ergonomics has been given in cooperation with Linköping University, the School of Engineering at Jönköping University and Lund University whose primary aim is to contribute to a sustainable working life. This is a cross-disciplinary Master programme primarily aimed at people already in their professional lives, Master in Ergonomics and Human-Technology-Organisation (TERGM).

Another example of cooperation is the Centre for Technology in Medicine and Health which is a cooperating body between KI, KTH and SLL with the aim of developing the Stockholm Region into a world class medical-technical centre. The Clinical Innovation Fellowships programme, whose goal is to identify and educate the leaders of the future medical-technical industry, medical care institutions and medical entrepreneurs and at the same time contribute to the development of Stockholm health and medical care has been underway for several years. Planning is also in the pipeline for further collaboration in which the various actors plan to co-locate parts of operations at the Karolinska Innovation Office.

Other cooperation

Cooperation with Stockholm University at AlbaNova takes the form of the Stockholm Centre for Physics, Astronomy and Biotechnology. In addition, in 2012 KTH and Stockholm University entered into an agreement on a joint Master programme in mathematics which will lead to a joint degree. This is the first time KTH has entered into such an agreement.

In 2011, a declaration of intent concerning extended cooperation within education and research was signed between KTH and the University College of Arts, Crafts and Design. A working group was established in 2012 aimed at formulating a third level educational programme within the framework of this cooperation. This work will continue in 2013 and the goal is to establish a doctoral programme at KTH in which the University College of Arts, Crafts and Design will provide a substantial part of the teaching.

KTH and Mid Sweden University (MIUN) concluded an agreement in January 2011 to jointly strengthen the Master of Science in Engineering programme. This agreement is valid until 2017. Coordination is carried out via a Steering Committee consisting of members from both universities. KTH and MIUN wish to establish a long-term relationship in which the interests of both universities will enhance operations and create long-term stability. This cooperation will mean that students, after their three first years of a Master of Science in Engineering programme at MIUN, can continue on certain Master Programmes at KTH. These Master programmes form the final two years of the Master of Science in Engineering degree. Consequently KTH will be able to increase the number of students at second level in its own educational programmes which provides better utilisation of existing university places. On concluding their studies the students are awarded a Master of Science in Engineering and/or a Master degree from KTH. The first students begin at KTH in 2014 at the earliest.

Cooperation with Dalarna University within the Master of Science in Engineering in Material Design continues. Teachers from KTH participate regularly in teaching and examination at Dalarna University. In the Metal Working Technology specialisation students are able to complete their entire education at Dalarna University or choose another specialisation at KTH. This is in order to fully utilise the competence located at both universities. There is also cooperation underway within Surveying at Lund University, University West and University of Gävle.

Sfinx

Sfinx (Swedish for Engineers in Stockholm County) began in project form in 2008 but is now included in standard operations. Sfinx is a cooperative venture between KTH, Järfälla Municipality, Stockholm City and Stockholm County Administrative Board. This programme provides immigrant engineers with the necessary knowledge in Swedish, English, engineering and Swedish business/industry and aims to facilitate their entry into the Swedish labour market.

Approximately 100 participants join the course every year. As in 2011, students in 2012 have, to a greater extent, sat in on KTH courses at first and second levels instead of following entire courses. Reporting has been carried out in the form of reports integrated into Swedish language training and have contributed to the students’ language grades. In the last group, around 40 per cent of participants gained jobs as engineers after this educational programme.
Research

KTH research is largely externally funded. At national level KTH receives research funding from a variety of government agencies and foundations, and from business/industry for collaborative research. Internationally, most financing comes from the EU.

During the year, KTH has evaluated all of its research through a second Research Assessment Exercise (RAE2012) – the first was in 2008. In this evaluation, for the first time in Scandinavia, focus was concentrated equally on research impact on its surrounding society and on research quality.

The process involved all research and consisted of three parts: a self-assessment carried out by all research groups, a bibliometric analysis of all publications and an external evaluation carried out by a hundred or so experts. A final report showing results and recommendations, including bibliometric analysis and description and examples of collaboration with society, was published in January 2013. See also under the KTH Quality section.

KTH’s strategic commitment as a leading partner in the EIT (European Institute of Innovation and Technology) has developed well in 2012 and is in line with KTH overall, long-term objectives.

RESEARCH PLATFORMS

By 2013, KTH’s research platforms in the areas of energy, information and communication technologies, materials, medical and biomedical technology and transport will have been in operation for four years. Research platforms work primarily with support to multi-disciplinary research initiatives, external cooperation, research infrastructure and communication. The platforms serve as catalysts for new initiatives, external cooperation, research infrastructure and transport research have been included.

In the autumn of 2012, an evaluation of platform operations was carried out in order to define their future role as related to the KTH Strategic Plan 2013–2016. The evaluation included interviews with various stakeholders at KTH and indicated that the platforms have lived up to expectations. The evaluation further confirms the benefits of providing support for multi-disciplinary research initiatives through joint collaboration platforms. See also under the KTH Quality section.

The Energy Platform, together with KTH Sustainability, initiated and developed a project entitled Zero Emission Campus with the aim of using KTH as a test bed for initiatives concerning the sustainable campus.

The ICT Platform has, during the year, worked with increasing its EU involvement and stimulating cooperation within major international funding applications.

The Materials Platform has launched a decentralised, virtual KTH Materials Laboratory that will help to provide a better overview of the KTH infrastructure in materials research.

The Medical and Biomedical Technology Platform has coordinated a number of major research funding applications. The platform is also the engine in planning activities for a future application entitled Innovation for healthy living and active aging.

The Transport Platform has helped in the establishment of Transport Labs, an interdisciplinary resource centre/laboratory funded by several schools, where future sustainable transport means are examined in project form.

STRATEGIC INITIATIVES

The long-term development of KTH research is occurring through several initiatives: the strategic research environments (SRA), centre formation in different fields and involvement in the EIT.

SRA

Since 2010, KTH has been the recipient of part of the government’s investments in strategic research areas. For KTH, the research fields of energy, esience, IT and mobile communication, molecular biosciences, manufacturing and transport research have been included.

In 2012, these funds were used to strengthen the KTH faculty and consisted of grants of SEK 215 million, of which SEK 98 million were transferred to co-applicant universities. KTH also has received SEK 9 million in grants from other universities, where KTH had been a co-applicant in their SRAs.

As part of the focus on these strategic research areas, new recruitments have been carried out for positions as assistant professor in the Tenure Track career programme. In 2012, some additional positions have been appointed.

These strategic research areas will, on instructions from government, be evaluated in 2014/2015. Until this date annual follow-up is stipulated and in February 2012 the second follow-up report was submitted which showed that all strategic research areas where KTH is lead university are in phase with their commitments.

Science for Life Laboratory

In 2012, KTH also continued to pursue the expansion of the Science for Life Laboratory (SciLifeLab) in collaboration with Stockholm University, Karolinska Institutet and Uppsala University. The vision for SciLifeLab is that it will be one of the world’s leading centres for research in molecular bioscience. The emphasis is on large-scale biological and medical research with its focus on automation, technically advanced data generation and development of expertise in bioinformatics and systems biology. In its Research and Innovation Bill in the autumn of 2012, the Swedish government announced further investment in the SciLifeLab.

EUROPEAN INSTITUTE OF INNOVATION AND TECHNOLOGY (EIT)

EIT is an interdisciplinary European cooperation project, whose vision is to act as an engine for European innovation and business development by uniting the knowledge triangle: higher education, research and industry.
KTH has participated actively in the Institute’s development and is, according to the objective stated in the Strategic Plan 2009–2012, a leading partner in two of the three EIT programme areas and KICs (Knowledge and Innovation Communities); ICT Labs and InnoEnergy. KTH’s involvement in the EIT has developed well in 2012.

The EIT will be allocated significantly increased resources and expansion into new areas is planned. KTH has, during the year, positioned itself for future participation in the establishment of these new KICs.

**EIT ICT Labs**

In 2011, EIT ICT Labs consolidated a stable base with efficient internal processes and consequently has, in 2012, been able to develop partnerships and activities with a focus on quality.

Overall, KTH development in EIT ICT Labs has been very positive in 2012 and the forecast for 2013 is that this trend will continue, as will the focus on quality rather than volume growth. EIT ICT Labs has not only led to deeper cooperation at European level, but also with the other Swedish participants such as Ericsson, the Swedish Institute for Computer Science (SICS), Stockholm Innovation & Growth (STING) and others.

Activities especially important to KTH have been in Networking for Future Media, Smart Spaces and Cloud Computing, however KTH participates in all sub-programmes, making the university the single largest partner in the consortium. A active network of technology advisors and business coaches in all EIT ICT Labs nodes has been established and several companies with origins in EIT ICT Lab operations have been successfully started up.

The operational hub is the Co-location Centre established in Kista. This has expanded during the year and is a popular venue for both internal and external events and meetings.

**EIT InnoEnergy**

The vision for InnoEnergy is to pave the way for an independent and sustainable energy system through successful commercialisation of innovations in terms of new products, services and business concepts. Operations in InnoEnergy are conducted through six nodes, where each node is responsible for specific thematic areas. The Swedish node’s responsibility is to lead projects in the smart grid and electrical energy storage fields.

This year KTH has participated in a total of 36 projects, including 23 Innovation Projects, ten educational programmes and three Lighthouse projects. Through these projects, KTH participates in all six of the nodes’ thematic areas and is thus one of the most active partners in InnoEnergy.

**CENTRES AND OTHER COOPERATION**

There are 40 research centres at KTH. The majority are financed through long-term commitments from, for example, the Energy Agency, the Swedish Transport Administration or Vinnova. Active cooperation is underway at these centres with industrial companies and with other stakeholders in society.

In 2012, four new centres started up: two with long-term financing (SwedGrid and Road to Science) and two with a focus on consolidating the research base and developing funding (JINGLE and Wind Centre). A number of additional proposals for centres are in the pipeline.

In addition, five VinnExcellence centres received prolonged financing from Vinnova (ProNova, CESC, iPack,- Hero-M BiMaC), two centres have been granted continued Linnaeus grants (Access, FLOW) and one centre has been granted prolonged funding from the Energy Agency (Turbo Power).

In 2011 a strategic five-year collaboration input was negotiated between the Swedish Transport Administration, VTI and KTH (Bana Väg för Framtiden, BVFF). In 2012 concrete activities began, which for KTH were channelled through the Road to Science (R2S) Centre. The intention is that collaboration will also be developed as concerns both the SRA (see above) as the Transport Platform.

In recent years, KTH has established five collaboration centres with Chinese universities. This collaboration is evolving to include education as well as research and in one case even development of infrastructure. These may form a vital base for expanded collaboration with China within research and education.

**EXTERNAL RESEARCH FUNDING**

**National**

The single largest provider of research funds for KTH is the Swedish Research Council (VR). This year VR extended three Linnaeus Grants until 2016. These were initiated in 2006 and concern three of the KTH Linnaeus centres: ACCESS – Autonomic Complex Communication Networks, Signals, and Systems, the Linne Flow Centre – A blueprint for the future flow research, and the ACCESS Doctoral Programme.

In 2011 the Wallenberg Foundation introduced an application system where each university president nominated applications within various programmes. In 2012, KTH was awarded grants as follows: two project grants; Sergei Glavatskih, Professor of Machine Design, received SEK 32 million for a five-year project on the development of ionic liquids as lubricants and Joakim Lundeborg, Professor of Molecular Biotechnology, received SEK 16 million for a two-year project to increase the understanding of the brain and its diseases. An infrastructure grant of SEK 30 million for equipment for nanotechnology and biomedical engineering was also awarded.

A Wallenberg Scholars grant of SEK 15 million was allocated Mathias Uhlén, Professor of Microbiology, for free research over five years. Wallenberg Scholars is a programme designed to support and encourage some of the most successful researchers at Swedish universities.
Collaborative research

This year Vinnova launched a new venture called challenge-driven innovation to stimulate collaboration projects where results may lead to new applications. In 2012, KTH received funding for a larger number of project in Project Form A (initiation of project) primarily in the fields of biomedical engineering and information and communication technology. The final level, Project Form C - Implementation, which is the stage closest to application and launch, will open in 2013. Some of the KTH projects which are currently in the construction phase (Form B) have shown enough results during the year that they could be relevant for an application at level C.

During the year, KTH has also been active within the framework of the Vinnova collaboration programme FFI (Strategic Vehicle Research and Innovation), which primarily relates to the materials and transport research platforms.

International

International funding consists mainly of EU grants, of which the dominant part is allocations from the EU Seventh Framework Programme for Research, FP7. In 2012, 10 per cent of the total research revenues consisted of EU funding. There were 44 new FP7 projects started during the year. Since 2007, when FP7 was launched, KTH researchers have participated in a total of 237 projects. KTH has also been active in other types of EU projects such as the Joint Technology Initiatives.

In 2012 KTH received two Starting Grants and one Advanced Grant from the European Research Council (ERC). To date KTH has been awarded 17 ERC projects. These grants are awarded to individuals. KTH is third in Sweden concerning the number of ERC grants, after KI who has 24 and Uppsala University with 22. Researchers receiving ERC Starting Grants in 2012 are Alexandre Proutiere, Senior Lecturer at the Division of Control Engineering who was awarded EUR 1.2 million for research aimed at increasing the capacity of future wireless Internet systems and Max Lemme, Visiting Professor at the School of Information and Communication Technology who received EUR 1.5 million for research into electronic circuits based on graphene instead of silicon. An ERC Advanced Grant has been awarded to Alexander Balatsky, Professor of Theoretical Physics, of EUR 1.7 million for research aimed at increasing the understanding of Dirac materials which include graphene.

This year KTH also received funding from research financiers outside the EU, although they represent a limited portion of funding in comparison to European and national research funding.

Some awards during the year

• Henrik Alfredsson, Professor of Fluid Physics at KTH and Dan Henningson, Professor of Fluid Mechanics at KTH, have been awarded APS Fellowships by the American Physical Society for their contributions to Physics.
• Bo Sundman, Professor Emeritus of Thermodynamic Modelling at KTH was the recipient of one of the 2012 Humboldt Research Awards. These are given to researchers who have distinguished themselves by making significant, fundamental discoveries in their fields. Award winners are invited to spend up to a year at a research institute in Germany to cooperate with colleagues in a long-term research project.
• Fredrik Lundell, Docent in Fluid Physics at KTH, has received this year’s Teacher’s Prize from Ångpanneföreningen Research Foundation. This Foundation awards an annual prize to one particularly good teacher of technology at the country’s colleges and universities.
• John Ågren, Professor of Metallurgy at the KTH received this year’s Säfström Medal from the Swedish Bergmann Association.

Honorary doctorates 2012

• Ružena Bajcsy, Professor at the University of California at Berkeley, USA, is one of the true doyennes of the artificial intelligence, computer vision and robotics fields. She has participated in the building up and shaping of these topics, and has exerted great influence in this research area.
• Susan Owens, Professor at the University of Cambridge, UK, has made great contributions to the demonstration of how historical and social environmental and planning research has been vital to sustainable development, including during her stay at KTH during the 2008/9 academic year.
• Stefan Persson, Board Chair of H & M has, in addition to his successful management of H & M, been closely involved in the development of education and research in the Stockholm region. He is, among other activities, one of the instigators of the formation of the Stockholm School of Entrepreneurship (SSES), where students are trained in innovation and entrepreneurship.
• Alberto L. Sangiovanni-Vincentelli, Professor at the University of California at Berkeley, USA, is a prominent international teacher, researcher and entrepreneur who has, through several significant cooperation projects, promoted KTH activities in system design, embedded control systems, wireless networks and other closely-related areas in ICT and software technology.
## Professors 2012

### Newly Appointed Professors (Externally Recruited)
- Energy Systems Planning
- Industrial Marketing
- Interaction Design
- Media Technology
- Sustainable Manufacturing
- System Safety within Healthcare Organizations
- Theoretical Physics (Nordita)

### Direct Appointed
- Applied and Distributed Computing
- Industrial Production

### Promoted to Professor
- Computational Thermodynamics
- Computer Science
- Concrete Structures
- Engineering Acoustics with Specialization in Signal Analysis and Measurement Techniques
- Electric Power Systems
- Electromagnetic Theory
- Electronic Circuits for Integrated Systems
- Energy Technology
- Environmental Strategic Analysis with Specialisation in Future Studies Methods
- Experimental Fusion Plasma Physics
- Fluid Mechanics
- Human Computer Interaction
- Material Physics
- Mathematics
- Music Acoustics with Specialization in the Physics of Musical Instruments
- Numerical Analysis
- Optoelectronic Integrated Circuits
- Reactor Technology
- Robotics
- Solid Mechanics
- Speech Communication
- Telecommunication
- Theoretical Chemistry
- Urban Design
- Urban and Regional Studies
- Wood Chemistry which Emphasis on Cellulose Materials

### Newly Appointed Visiting Professors (Externally Recruited)
- Bioenergy and Biosustainability
- Condensed Matter Physics with Specialization in Applied Spintronics
- Condensed Matter’s Physics (Nordita)
- Engineering Education Research
- Environmental System Analysis
- Materials Science
- Robotics and the Autonomous Systems
- Social Planning and Environment with a Focus on Applied Decision Theory and Democratization Processes
- Tage Erlander’s Guest Professor (Nordita)

### Newly Appointed Part-Time Consulting Professors
- Economics of Transport Strategy
- Environmental Economics and Environmental Statistics
- Fibre and Polymer Technology
- Land Access and Reimbursement of Buildings and Infrastructure
- Language Technology
- Road and Railway Track Engineering

### Professors Who Have Left or Retired
- Carbohydrate Biochemistry
- Chemistry with Specialization in Thermochemical Kinetics
- Computer Science and Numerical Analysis
- Computational Thermodynamics
- Economics of Infrastructure
- Fusion Plasma Physics
- Hearing Technology
- Industrial Economics and Management
- Industrial Informations and Control Systems
- Industrial Risk Management
- Mathematical Physics
- Numerical Analysis
- Organic Chemistry
- Physical Chemistry
- Polymer Technology
- Project Communication with Focus on Project Management
- Information Technology
- Toxicological Risk Assessments

Source: HR+
In 2012, KTH’s ambition to enter into more extensive collaboration with society was further developed in close dialogue with KTH teachers and researchers. The work has been conducted in a positive atmosphere where KTH alumni, partners and other key individuals helped to strengthen KTH’s position as a leading technical university whose activities will lead to solutions to our time’s major societal challenges through excellent research and education of innovators.

**KTH MODEL FOR COLLABORATION: PARTNERSHIP, STAFF MOBILITY, ARENAS**

The KTH Strategic Plan for 2009–2012 included the objective that KTH would build up an "Industrial Faculty" consisting of researchers from partners associated with KTH using various adjunct and affiliated professorships. A forum for adjunct faculty at KTH was created on 1 July 2012. There was to be an arena for discussion on collaboration between academia, business, industry and society, and an advisory body for KTH management. The number of adjunct professors has increased from 43 to 48 this year.

During the year, within the operations of the Vice-President’s Faculty for Innovative Engineering, different models for stronger collaboration have been developed. The KTH model for collaboration includes formalised partnerships, staff mobility, and arenas that strengthen the Stockholm Region and KTH. A process has been developed which provides support for the initialisation, operation and monitoring/development of collaborative relationships. This creates the preconditions for the implementation of the KTH Strategic Plan 2013–2016, where a clear goal is to establish more long-term partnerships, both at central and school levels.

One structure for staff exchanges was the new designation Affiliate Faculty and recommendations for industrial doctoral students at KTH have also been developed this year. Affiliate Faculty member is the level below Adjunct Professor and may be focussed on education, research, or both. This is a method of developing combination careers for KTH partners in close cooperation with academia, which has been requested by both partners and faculty.

In addition to the cooperation agreements with Scania and Stockholm County Council (SL) which were entered into in 2011, there are now strategic partnerships with Skanska, Ericsson and ABB. Dialogues with a number of other companies are underway. In November 2012, the management of Stockholm City, Stockholm County Council, Stockholm County Administrative Board, Karolinska Institutet, Stockholm University, Södertörn University and KTH took a decision to establish closer cooperation through OpenLab. Here, people from different fields of knowledge meet in order solve complex social problems in close cooperation with active clients. Operations will be established on the KTH campus at Valhallavägen where a building is being modified for this purpose.

**Collaboration with business and industry**

KTH is to promote, expand and extend relationships with the society around it. The KTH unit Business Liaison acts partly as link between the outside world and KTH researchers as concerns incoming requests. About 130 requests for collaboration and technical inquiries have been received and processed in 2012. During the year, a team of five collaboration coordinators worked to promote collaboration. They act as guides for KTH Schools, strategic research platforms, companies and organisations. They have also collaborated with external partners concerning a number projects and activities including:

- Stockholm Cleantech Business Network, a company network aimed at boosting the growth and export of environmental technology. KTH arranges meetings of the network where academia, companies and other actors gather to make contact. During the year, approximately ten meetings were arranged. KTH has also been involved in the establishment of a showroom and company network that was formed around the 100Hus at Hornstull where 35 small environmental technology companies were installed and demonstrated their products.

- Powerhouse Stockholm Life is a three-year project that will be completed in 2013 aimed at developing tools and processes for collaboration and knowledge transfer between academia, health and medical care and life science industries in the region. The project includes KTH, Karolinska Institutet Science Park, property companies and Stockholm Science City Foundation.

- The Knowledge Pilot works to develop efficient forms of collaboration between small and medium sized enterprises and academia in the region, mainly within the health and environment fields. The project, which is funded by the Regional Fund, has been in operation since 2008 and is run by KTH, Karolinska Institutet and Stockholm Academic Forum. Within the framework of the Knowledge Pilot KTH has developed the concept AIMday (Academy Industry Meeting day) in cooperation with Uppsala University and an AIMday Image, AIMday Patient Safety and AIMday Materials were organised in 2012. A workshop series aimed at starting up collaboration projects between providers and academia on the theme of retirement homes has been underway during the year and held five meetings. The Concept Forest Beyond, which aims to create more innovations from forest-based materials, has been further developed.

In 2012, the major focus was on developing and launching the KTH degree project portal. The Swedish version was launched in April and the English version in October. During the year, nearly 600 advertisements were published, including degree projects, trainee jobs, part-time work and projects.
In 2012 KTH, together with Stockholm University, initiated an EEA-funded project – Notis. Its aim is to increase teachers’ contacts with their students’ potential employers. Through this project and other internal activities, good examples are disseminated within and between KTH and other universities and colleges.

**Future Female Leader Award (FFLA)**

KTH runs a competition entitled Future Female Leader Award. The aim is to attract more female students to KTH, to motivate them to take on a leadership position in the future, and to provide them with opportunities to build networks. During the year inspirational activities, competitions, company visits, mentoring programmes and networking events have been staged in cooperation with the FFLA partner companies: Scania, Astra Zeneca, Ericsson, Sandvik, Electrolux, Skanska, Fortum and TeliaSonera.

**Career Development**

For almost ten years KTH has provided students with support for their successful establishment on the labour market. Support has consisted of mentoring programmes, career development modules in the Master of Science in Engineering programmes, seminars on the labour market and career coaching. In recent years, a number activities aimed at KTH international students have been organised. In 2012, six lunch seminars on the theme of how to seek employment in Sweden were organised and 140 students participated. During the year, information on the English website has been expanded to include career planning and the application process for international students.

**Commissioned and further education**

The collaboration task also includes providing further education for professionals. KTH offers courses in a variety of areas aimed at extending and broadening expertise for, primarily, professional engineers and architects. However they are also aimed at other groups who need skills development such as teachers.

**Alumni**

KTH alumni operations are to create opportunities for former students to keep in contact with KTH and contribute to KTH’s strategic development and networks.

In 2012, KTH Alumni has worked actively to present different ways for how alumni can become involved with KTH, and a steadily growing number of former students have contributed financially or with their time and knowledge. In the spring an extensive survey was carried out among the alumni who showed great interest in interacting with KTH.

KTH alumni have the opportunity to develop their personal and professional networks at any of the 32 events organised in and outside Sweden and through the online community. There are now 54,000 contactable alumni in the register, of which 16,300 have activated their profiles in the KTH Alumni Community. The KTH Strategic Plan for 2009–2012 states a target of at least 12,000 alumni to be registered in the KTH alumni network. The KTH Alumni LinkedIn group is the largest alumni group in Sweden with about 11,000 members, an increase of 50 per cent in 2012.

The Strategic Plan for 2009–2012 also included the goal of at least 2,000 alumni to attend reunions and career events at KTH campuses per year and at least one KTH alumni event abroad per year. The development of the KTH global network of alumni has led to increased international activities. From having organised one international alumni meeting per year in 2009 and 2010, 18 such events were held in 2012. Alumni associations have been established in India, Singapore, Switzerland and the United States.

**Innovation Support at KTH**

KTH Innovation works to develop research results and business ideas from researchers and student at KTH to enable them to meet the market.

In the KTH Strategic Plan for 2009–2012 the objective was that KTH was to develop a market-oriented support system for the commercialisation of research on new technologies. Development activities aimed at fulfilling this objective has been underway within KTH Innovation since operations began there in 2007 and later also in the innovation office InterAct, which has been in operation since 2010. KTH Innovation has built up a structured process and developed tools for all aspects of the commercialisation process.

During the year, KTH Innovation has strengthened and extended its support to students through continued investments in Student Inc., KTH’s student incubator. Student Inc. operates in cooperation with the students’ entrepreneur association Excitera and support includes KTH Innovation business coaching, workshops, commercial support, office space and access to contacts and networks.

**Innovation office InterAct**

The qualitative goal for InterAct is to broaden, extend and streamline the innovation system in the Mälaren Valley. A number of quantitative targets have been established in extensive target document and are continuously monitored. For example, increased inflow of ideas, increased number of ideas that are moving forward, improved quality and quantity of outflow as well as coordination and sharing of processes, structural capital and activities.

One aim of this investment in an innovation office was to create synergy effects between different actors within the innovation system. InterAct partnership helps maximise synergies by, for example, building cooperation with existing activities and strengthening the skills base locally. This year the partnership submitted a joint application.
for funding from VINNOVA’s Verification for Growth programme. The application was ranked as number one and InterAct was allocated the largest share of the funds.

Cooperation with universities and institutes outside the partnership has been strengthened in 2012, including the co-recruitment of a patent engineer in conjunction with Uppsala University and the development of a number of projects from SICS (Swedish Institute of Computer Science), Inventia and Swerea within the InterAct innovation process. Closer cooperation with various business incubators in the region has also been initiated.
Quality assurance

GENERAL

Quality assurance framework
The objective stated in the KTH Strategic Plan for 2009–2012 was that “All activities at KTH will have a well-communicated and accepted quality system, based on the principles of systematic improvement”. This is a general objective and continuous efforts have been made to achieve it. A Quality Policy covering the period 2011–2015, Quality through systematic improvement, has been adopted by the KTH University Board. This includes an action plan which is followed up on an annual basis and a schedule stating when major follow-up projects are to be initiated and implemented. Projects implemented according to this plan include the Education Assessment Exercise (EAE) 2011 and the Research Assessment Exercise (RAE) 2012.

KTH Quality Policy and action plan are based on the fields: education, research, competence management and collaboration. Quality activities implemented in 2012 within these areas are described in the chapters entitled Education, Research, Staff and Collaboration respectively. KTH has carried out independent quality reporting since 2011. The aim is to present a comprehensive and detailed picture of quality assurance activities and to emphasise the evaluation and follow-up undertaken in order to improve and secure the quality of KTH operations. Quality reporting is thus part of efforts to communicate quality assurance activities both internally and externally.

The formal division of responsibility and the administrative support organisation provide the framework for KTH quality activities. In brief, the Faculty Council, led by the Dean, is the university body with overall responsibility for ensuring the quality of educational programmes (first, second and third levels), the quality of research and the quality of collaboration with society. Each school has a coordinator responsible for first and second level educational programmes, with the title of Director of Undergraduate and Master Studies (GA) and a coordinator responsible for third level programmes, with the title of Director of Doctoral Studies (FA). Each educational programme has a Programme Director (PA) who is responsible for the programme.

Strategic Plan
The Strategic Plan is the document outlining KTH overall activities. The objectives stated in the Strategic Plan for the period 2009–2012 are followed up in the relevant sections of the 2013 Management Report.

In 2012 comprehensive activities, including thematic review seminars and proposals circulated for comments, have taken place in order to establish, and gain acceptance of, the KTH Strategic Plan for the next period. The point of departure of this activity was the long-term vision, Vision 2027, which was established in 2011. The Strategic Plan for 2013–2016 was adopted by the KTH University Board in December 2012, with emphasis on the context in which KTH operates, identity and values, as well as on education, research and innovation, collaboration, careers and shared resources.

Ranking
Within KTH strategic development activities it is important to adopt a position on international rankings and benchmarking tools. Rankings have a significant bearing on student recruitment, recruitment of international researchers and opportunities for funding. Consequently, KTH has elected to prioritise rankings which can be related to the concept World Class University; this means primarily the Times Higher Education but also QS World University Rankings and Shanghai Jiao Tong, all of which focus, in the first instance, on research excellence. A further initiative in which KTH has become involved is U-Multirank, an initiative of the EU Commission which will be launched in 2013 as a full-scale European multi-dimensional ranking which includes quality of education.

2012 was a successful year for KTH in the rankings. In Times Higher Education, KTH advanced 47 places to number 140. The success was due to several factors, but primarily to a number of scholarly articles in the fields of astrophysics, solar cell research, high energy physics, particle physics and biotechnology, which were widely cited in influential international publications. KTH also climbed in the QS World University Rankings in 2012, from 180 to 142. This was largely due to KTH earning good results in the international questionnaires distributed to researchers and employers, which shows that KTH has a strong brand in the worlds of academia and industry.

QUALITY ASSURANCE IN EDUCATION

Follow-up of Education Assessment Exercise
In 2011, all educational programmes at KTH were evaluated in an Education Assessment Exercise (EAE). In 2012, a systematic follow-up was implemented. This was reflected in the schools’ operating instructions, as well as in a special action plan regarding responsibilities at central level. The result of the EAE Project was a number of concrete initiatives. These included reinforced programme responsibility in the form of, among other things, a clearer definition of responsibility and work duties, and a new network for programme directors. As a further consequence of the EAE results, investments have been made in areas such as mathematics, sustainable development and through flow of students.

Further, the Faculty Council Education Committee undertook a comprehensive follow-up of the EAE results in the spring. The Committee carried out a series of separate follow-up meetings with heads of school, directors of undergraduate studies, and programme directors. Prior to these meetings, the schools submitted underlying material in respect of their own EAE results. The primary aim was to provide the opportunity to raise issues that were of
particular interest and consequently to highlight everyday problems. A number of points emerged from these meet-
inggs, and these have been transferred to the schools’ oper-
at ing instructions for 2013, and will be monitored regularly by the Education Committee. The Committee’s follow-up also served to highlight positive examples.

National Agency for Higher Education evaluation
In 2012 the National Agency for Higher Education began an evaluation of all Master of Architecture, Master and Bachelor of Science in Engineering programmes in Sweden, as well as programmes within the fields of engineering sciences and mathematics. Supplying the necessary underlying material involved a comprehensive effort on the part of KTH. For KTH, the evaluation involved the random selection of a total of some 600 degree projects to comprise the underlying material, they were then de-
identified and entered into the National Agency for Higher Education database. A further 36 self-assessment reports, describing and analysing goal achievement for each degree specialisation were submitted.

Preparations for the evaluation began during the spring when it was determined which programmes would be included and who the contacts were to be. During the spring, a questionnaire was also distributed to KTH pro-
gramme directors on learning goals regarding the environment and sustainable development. The questionnaires were also intended to be utilised as preparation for self-
assessment activities. The majority of the self-assessment work carried out in the autumn took place at local level, coordinated by cluster coordinators and with considerable contributions from course and programme directors. KTH also established an administrative support organisation and a collegial organisation consisting of editing groups led by members of the Education Committee.

The result of the evaluation is expected in mid-2013. Work with the evaluation has, together with the previous EAE, led to new knowledge and, to some extent, to new issues arising. An internal follow-up process will there-
fore be established to focus on these early in 2013.

Follow-up of students and doctoral students
KTH regularly carries out four surveys aimed at students and alumni: the start questionnaire, the mid-term question-
aire, the career follow-up and the doctoral students follow-up. The first three make it possible to follow stu-
dents in the first and second levels from the day they are admitted until they complete their studies and later establish themselves on the labour market. The fact that the questionnaires are repeated makes it possible to follow trends over time. The replies to the questionnaires can be analysed according to gender, age, Swedish as native language and the academic background of parents. The results are presented both as an overview and in separate tables for KTH as a whole, type of programme, programme and school. As a result, these questionnaires act as a basis for systematic quality activities at various levels.

The results of the career follow-up and the start question-
aire, both of which were carried out in 2011, were follow-
up in a number of ways in 2012. Study advisors are among those who have utilised the career follow-up survey in contacts with potential students and employers. This was also important underlying material in the evaluation by the National Agency for Higher Education as it provided confirmation that students do achieve their degree goals.

In addition, a mid-term evaluation was carried out in 2012. The questions asked were, to some extent, new and had also been specially adapted for use in the work to improve through flow in KTH programmes. The focus of the questionnaire therefore included identity and identi-
fication – issues which are considered important when explaining student drop-out rates. In this respect, the results were good. The majority of students are satisfied and feel a sense of loyalty to their programme and to KTH. The mid-term survey showed that, in general, younger men and Master of Science in Engineering students are the most satisfied with their programmes. Women, older students and students whose first language is not Swed-
ish are less satisfied, and there is a further problem in that the number of students who do not have sufficient student funding for the full period of study is relatively large. During the year, a doctoral student follow-up was also distributed. The questionnaire was sent to the final intake of doctoral students prior to the introduction of the doctoral programme, and contains questions regarding post-degree employment, the research environment and KTH. The results will be published in 2013.

QUALITY ASSURANCE IN RESEARCH
Research Assessment Exercise
In 2012, KTH has, on its own initiative, carried out a second comprehensive research evaluation, Research Assessment Exercise (RAE2012). The first was carried out in 2008. These evaluations have significant strategic importance to KTH, as the primary aim is to identify strengths and weaknesses and thus drive up quality and offer guidance for future investment.

RAE2012 involved a large number of members of KTH Faculty and administration, as well as several key external personnel. The evaluation contained three main elements: a self-assessment carried out by KTH research groups (47 in total), a bibliometric analysis of all publications, and an external evaluation conducted by just over 100 internationally-renowned experts divided into 15 panels. The external assessors visited KTH for one week in June 2012. The evaluation was carried out based on three categories: quality of research output, impact on and involvement with society, and research environment.

The evaluation identifies general strengths within research conducted at KTH, but also a number of weak-
nesses. Overall, the quality of research produced is highlighted as KTH’s greatest strength. Of the 47 research groups, 22 are assessed as conducting world-leading research in the majority of their work. A further 24 research groups receive the highest level of assessment for their collaboration with society. In the field of vital and sustainable research environments, 16 research groups are considered as potential breeding ground for future world-leading research production.

The bibliometric analysis confirms KTH’s known strengths within fields with a strong tradition of publishing in international scientific journals. This shows the importance of recruiting greater numbers of internationally-renowned researchers who can contribute to the continued success of KTH. RAE2012 also highlights successful research groups who exhibit different publishing tendencies such as books, conference contributions and popular science publications.

As in the 2008 evaluation, KTH’s collaboration with society, including companies and government agencies, is considered to be an undoubted strength. There have also been positive developments during the period between the two evaluations, for example in the form of a larger number of collaborative projects, joint publications, exchanges of staff and innovation activities. Furthermore, the impact on society of KTH research is assessed as significant and relevant. The 94 case studies presented in the evaluation are an illustration of this.

The weaknesses shown by the evaluation largely concern the need for long-term investment in research infrastructure in order to assure the future vitality and success of the environments. Further recommendations concern the continued necessity of investment in multi-disciplinary collaboration, and also in the groups that are strong within basic research. In some cases, the panel identified individual research groups which require additional investment. Activities aimed at following up the results of RAE2012 commenced during the year and will continue through 2013 and beyond. The result of the evaluation will be followed up in internal resource allocation and in the schools’ operating instructions.

The evaluation shows that, in general, the platforms have met the expectations of key groups. Although there are variations between platforms and schools, those interviewed are, on the whole, positive both towards the creation of the platforms and to how they have developed over time. This applies to, for example, the opportunities they provide to initiate new forms of collaboration, to coordinate research applications and to receive feedback from international advisors. The assessor therefore recommends that KTH continues along this path, but further clarifies and gains acceptance for the role of these research platforms. These recommendations have formed the underlying material in the formulation of the Research Section in the KTH Strategic Plan for 2013–2016.

QUALITY ASSURANCE WITHIN COMPETENCE MANAGEMENT

Evaluation of Tenure Track career support

This year, an evaluation of Tenure Track career support was undertaken. The study, which is based on interviews, studies of documents and benchmarking against other higher education institutions, shows that the career development support offered by KTH fares well in both national and international comparisons. The participants are, on the whole, positive towards the elements included. It is, however, suggested that the organisation around the support should be strengthened by means of both a more distinct central coordination function and a better system for continuous career planning at school level. The recommendations made in the evaluation will be followed up in 2013.

University teaching qualification course

KTH requires a university teacher training course of 15 credits for teacher recruitment. In 2012, these courses were held in three different areas:

- Initial teacher training for doctoral students (one course)
- Higher pedagogical training for teachers (a total of five different courses)
- Training for supervisors in third level programmes (one course)

The university teacher training courses held in 2012 have had a total of 386 participants (teachers and doctoral students).

Evaluation of research platforms

In 2012 an evaluation of KTH research platforms was carried out focusing on the extent to which these have met the expectations of key groups. The assignment was carried out by an external expert, Professor Lennart Josefson of Chalmers University of Technology.
Environment and sustainable development

Sustainable development issues currently drive a large part of technical research. One of KTH’s objectives is to be among Europe’s leading technical universities in the field of the environment and sustainable development. The KTH identity and brand must therefore be associated with comprehensive, profound activities in these fields.

KTH contributes to sustainable development through education, research and collaboration with society but also impacts on the environment through its own activities. This environmental impact includes energy consumption, use of materials, construction, travel and transport. The new emphases on the environment and sustainable development, which was established at KTH in 2011, has continued in 2012 within the two intertwined activity areas of KTH Sustainability and Sustainable Campus. A considerable number of activities have been implemented during the year.

KTH SUSTAINABILITY

In 2011, the KTH Sustainability Council (KTH-S) was founded in order to work on the environment and the sustainable development of KTH’s research, education and collaboration. KTH-S is an advisory body to the President and prepares matters for the Faculty Council. It is headed by the Vice President for Sustainable Development and consists of teacher and student representatives, and the KTH Environmental Manager. A newsletter is issued regularly which communicates information regarding calls for applications for research funding within the environment and sustainable development. A project plan has been established for the continuation of these operations.

The environment and sustainable development are the focus of several programmes, in particular the engineering programme Energy and Environment, which is a collaboration between four KTH schools. In addition, several Master programmes have the environment and sustainable development as their theme. In part as a result of the Education Assessment Exercise (EAE) in 2011, new courses which are relevant to the environment and sustainable development have been developed at several schools and new modules have been added to existing courses.

In 2012, all programme directors of KTH Master and Bachelor of Science programmes in Engineering and in Architecture received a self-assessment questionnaire with the purpose of supporting the systematic quality activities in respect of sustainable development in KTH educational programmes. These self-assessments will be followed up in 2013. During the year, KTH Sustainability has produced specifications of the overall learning goals in respect of sustainable development. The Faculty Council is positive to the specifications as guidelines for programme and course directors. KTH Sustainability will therefore continue to work with this issue over the course of the next year.

KTH Sustainability has, during the year, carried out a number of activities to encourage researchers and employees at KTH to meet and discuss topical issues, such as green buildings and waste management. KTH Sustainability Research Day was held in October, with approximately 200 participants, both in-house and external. In order to encourage greater collaboration within the university, this year KTH Sustainability has contributed to the funding of a number of projects within education and research. KTH Sustainability has also initiated activities to establish a forum for doctoral students in the field of sustainable development which will offer, among other things, third level courses and networking opportunities.

SUSTAINABLE CAMPUS

In the KTH Strategic Plan for 2009–2012, one objective was to establish a Strategic Plan for the physical environment with specific focus on an integrated, sustainable campus environment. In 2012, significant environmental aspects for KTH were identified as: energy consumption, transport, utilisation of chemical products, waste disposal, procurement and utilisation of goods and services, education, research and collaboration. A new environmental policy was adopted by the KTH University Board in the autumn, and overall environmental goals to cover the next three years were determined by the President.

During the year, the focus of Sustainable Campus activities has been the implementation of a certifiable environmental management system. The foundations for an environmental management system have now been laid, and the process of implementing systematic environmental activities will be carried out over the next two years. The KTH objective is to have a certifiable environmental management system in place in 2014.

Activities concerning the environmental management system are governed centrally by the Environmental Group within the Infrastructure Division of the University Administration. The role of the Environmental Group is also to support and advise KTH schools and university administration in their environmental activities. Activities and measures which have been implemented during the year include the mapping of environmental legislation and regulations covering school and university administration, and training of the schools’ environmental representatives in the ISO 14001 environmental management system.
Internationalisation

INTERNATIONAL MOBILITY
In the KTH Strategic Plan for 2009–2012, one objective was stated as KTH graduates to be attractive on the international labour market. KTH conducts a comprehensive career follow-up of alumni every two years. The most recent is from 2011. This follow-up shows that 20 per cent of students who graduated in the academic year 2008/2009 currently work abroad. Almost 70 per cent of the students say their education at KTH has prepared them well for an international career. In the career follow-up in 2009, the corresponding figure was 59 per cent. Of the international students who have studied at KTH, 79 per cent consider that the education is good preparation for an international career.

The Alumni Section at KTH works continuously and systematically to maintain and re-establish contact with KTH graduates. An increased focus on international alumni activities has resulted in the establishment of approximately ten alumni associations and, by the end of 2012, KTH had established contact with 2,800 alumni outside Sweden (see also the chapter on Collaboration). This is an increase of 75 per cent in 2012 alone.

In the KTH Strategic Plan for 2009–2012, one objective was stated as the number of outgoing KTH exchange students would double from 330 in 2007 to 675 in 2012. In 2012, a total of 509 (443) students began exchange studies abroad. Of those, 288 (56 per cent) studied at a university outside Europe. Of Master of Science in Engineering or Master of Architecture graduates, 33 (27) per cent were involved in exchange studies for at least one term during their studies. A total of 63 (58) KTH students studied abroad in 2012. The most common countries for exchange studies were France, Singapore, Switzerland, Germany, the US and Australia. In all, this means that KTH has largely achieved the Strategic Plan objective for 2012.

Another Strategic Plan objective was that the number of European students registered on one and two-year Master programmes at KTH would rise from 250 to at least 450. In 2012, 364 students with a European educational background were registered on KTH one and two-year Master programmes. Consequently this objective has not been achieved, despite the university’s best efforts.

During the year 1,327 (1,538) students began exchange studies at KTH. The total number of incoming exchange students at KTH was 1,895 of whom 1,459 came from universities within the EU/EEA, and the majority of students came from universities in France, Germany and Spain. KTH had 436 students from countries outside the EU/EEA, the majority of whom came from Singapore, the US and China.

Since KTH collaborates with well-known universities, incoming exchange students generally achieve very good study results, and the evaluation shows that exchange students are generally very satisfied with their studies and the study environment at KTH.

The University Board took a decision in June 2012 that the design of the study exchange programme should be directed towards achieving a balance and that the number of incoming exchange students should be reduced. At the same time, conditions for KTH students to pursue exchange studies abroad should be secured and improved. This is a long-term process and is not expected to have any visible impact until 2015. One important step in this activity is to give KTH schools, in their operating instructions, specific targets regarding the number of incoming and outgoing exchange students for the school. For some time, the number of incoming exchange students has been greater than the number of outgoing exchange students. This trend appears to have been reversed in 2011 with an increase in the number of outgoing exchange students and a relatively stable number of incoming students. The trend was confirmed in 2012, which implies that preconditions for achieving a balance are good.

In 2012 KTH has, as a step towards achieving balance in the student exchange picture, worked to define a number of prioritised universities for exchange. These exchange universities can be divided into three groups:

- Prioritised universities in Europe. KTH has specified just over 40 universities for long-term investments in exchange. In general, all the schools collaborate with these universities and, as far as possible, agreements are made centrally. A proposal for the extent of exchange with these universities has been drawn up.
- Universities outside Europe with which KTH has central agreements, which is the most common form of collaboration outside Europe. Since the introduction of tuition fees, KTH must be able to guarantee consistent follow-up of student exchanges outside Europe and secure a relatively stable balance. The extent of this category of students is expected to be relatively stable in the near future. Central agreements make it easier to maintain stable, long-term student exchange.
- Local exchange collaboration where schools within KTH are responsible for their own agreements. The schools themselves will prioritise their agreements. The number of local places is determined together with KTH management in the agreement process and in the school’s annual operating instructions. The number of incoming students from these universities is expected to fall.

In order to support an increase in the number of outgoing exchange students, a target group survey was carried out in 2012 to identify the factors that influence choice of studies abroad and what measures can be taken to encourage more students to try this form of education. The survey has resulted in a communication and activity plan to provide information for students. There are a number of other issues which need to be addressed, including more transparent management of study planning and credit...
transfer in respect of studies abroad, as well as more places for exchange students at attractive, English-speaking universities.

One major event in 2012 was Go Global, one example of an investment in information that had been requested in the target group survey. The purpose was to inspire more students to take advantage of the international opportunities offered by KTH. In one week in October, a number of events took place including lunch-time talks by guest speakers, evening events with a focus on prioritised regions, an international fair with approximately 40 participating partner universities and breakfast meetings at the schools. These activities were combined with web-based activities such as exchange-student blogs and competitions. Go Global attracted a huge amount of interest. All the activities which required pre-booking were full, making a total of 3,500 registrations, and the Go Global website enjoyed 20,000 visits in the month prior to the events. An evaluation which mapped student attitude to studies abroad before and after the event showed, among other things, that 100 students plan to study abroad as a result of participating in Go Global and that a considerable majority of visitors spread a positive message about studies abroad to other KTH students. As a result of the positive outcome of Go Global, a similar event is planned for 2013.

Interest in projects abroad, for example in the form of degree projects, is growing and KTH aims to be able to offer a greater number of scholarships for such purposes. During the year, 37 students began an Erasmus placement at a company or organisation in Europe and 40 students were granted scholarships to do field studies in developing countries within Minor Field Studies (MFS), a programme funded by Sida. A new project at KTH also made it possible for international students who are not eligible to apply for MFS to be awarded similar scholarships. The project was entitled Field Studies and funded scholarships for 12 students.

**Student mobility at third level**

The international element of KTH doctoral studies is extensive. Almost one half of KTH students at third level have a previous degree from a country other than Sweden.

Of graduates at doctoral level, 16 (13) per cent of the licentiate graduates and 14 (15) per cent of doctoral graduates spent at least three months of their total study period abroad. Many more, 36 (98) per cent of the licentiate and 84 (88) per cent of doctors have, during their period of study, participated in research and presented their research findings at international conferences. During the year, 60 (62) students at the doctoral level spent at least one month abroad, while 97 (85) foreign students similarly spent at least one month at KTH.

**Tuition fees for third country students**

2012 was the second year in which KTH charged tuition fees for third-country students in accordance with the Ordinance concerning registration fees and tuition fees at higher education institutions. KTH has a target of one thousand new fee-paying students in the autumn of 2016. In order to achieve this goal, major investments are being made in, among other things, recruitment and the establishing of an efficient administration for fee-paying students.

In the autumn of 2012, a total of 243 (316) new students who were obliged to pay tuition fees arrived. Of these, 54 (19) paid no fees as they were included in exceptions stated in the Ordinance or as a result of a special government decisions for students on the Erasmus Mundus Programme. The total number of new students on programmes who were registered as fee-paying was 189 (125), of whom 70 (62) had been awarded scholarships. In 2012, for the first time, new self-funded students included 24 who had come through collaboration with Beijing Jiatong Technical University in China, 19 through EIT ICT Labs and 13 through EIT InnoEnergy.

In 2012, KTH hosted a total of 619 fee-paying students on programmes, who were obliged to pay tuition fees, of whom 228 were self-funded, 135 received a grant and 256 paid no fees as they were included in exceptions stated in the Ordinance or as a result of a special government decisions for students on the Erasmus Mundus Programme.

**Scholarships**

Offering scholarships may be a decisive factor in recruiting the best students. Access to scholarships, to reduce or fully fund tuition fees for students obliged to pay tuition fees, has therefore continued to be a priority in 2012.

The scholarship categories available to KTH were both scholarships through the Ordinance on scholarships for fee-paying students (IPK scholarships) and scholarships funded by the Ernst Johnson Foundation which is administered by KTH.

Of current KTH students, 25 are funded by the Ernst Johnson Foundation, 78 by IPK scholarships and two through the KTH – India Scholarship Foundation. Only students who would be paying tuition fees are eligible to apply for a KTH scholarship and selection is based on academic excellence.

In addition to KTH scholarships there are a further 33 Master students who hold scholarships administered by the Swedish Institute. Overall, KTH hosted 135 students funded through KTH or Swedish scholarship programmes. In addition to these categories there are also students funded by Erasmus Mundus Action 1 and 2 enrolled in KTH Master programmes.
In connection with the introduction of tuition fees, KTH intensified its prioritisation of a number of regions for targeted investment. Since 2010, these regions have been China, India, Southeast Asia and Brazil. In 2012, KTH determined to further develop, extend and increase activities in these four regions. KTH has also appointed a designated academic employee to each region with the task of disseminating the KTH brand, increasing student exchanges with elite universities, creating opportunities to recruit students who will pay tuition fees at KTH and, in the long term, developing research collaboration. In 2012, this has resulted in almost all international communication to the prospective fee-paying student target group being focused in these priority regions.

**China**
China has been given top priority for student recruitment in 2012, largely due to the information challenges the country presents. In order to reach prospective Chinese fee-paying students, KTH has established a Chinese website and initiated a strong presence in Chinese social media. The collaboration with China has thus far resulted in the signing of two agreements for recruitment of fee-paying students who have studied a three-year Bachelor programme in China, under the 3+2 collaboration. In the autumn of 2012, 24 students began studies at KTH under one of these agreements. New collaboration projects will start in 2013. A further five agreements have been signed with Chinese universities where students have completed a four-year Bachelor programme, under the 4+2 agreement. As part of the scholarship collaboration with the China Scholarship Council, CSC, KTH has welcomed 40 doctoral students and researchers, and three Master students. New collaborative efforts will also start in this area in 2013. During the year, 321 students from China applied to Master programmes at KTH. Of these, 91 were admitted and 37 (25) paid tuition fees.

**India**
Under collaboration agreements with India, KTH has nine established partner universities which are the focus of strategic efforts in this area. KTH participates in two Erasmus Mundus Action 2 projects (INDIA4EU and Sva-gata) whose foremost aim is to host Indian scholarship students at second and third levels. Activities have also included visits to universities and participation at fairs with the purpose of recruiting fee-paying students. During the year, 346 Indian students applied for a Master programme at KTH. 98 were admitted, of whom 23 (7) paid tuition fees.

**Southeast Asia**
In Southeast Asia, KTH runs an extensive and balanced student exchange programme with the elite National Uni-
versity of Singapore and Nanyang Technological University in Singapore. Approximately 40 places are available each year for exchange in both directions. During the year, the first alumni meeting was held in Singapore with 37 participants. Contacts have also been established for future collaboration, both with universities and with companies and other organisations. During the year, KTH joined the Thai Chamber of Commerce and discussions are under way with Ericsson regarding commissioned education in Indonesia. In 2011, 33 students from the region applied for a Master programme at KTH. Six were admitted, of whom one paid tuition fees.

Brazil
KTH has a priority goal to increase KTH student interest in studying in Brazil. A number of activities have taken place during the year. A new exchange agreement has been signed with Universidade Federal Do Rio Grande Do Sul, and mobility with the five KTH partner universities in Brazil has increased to comprise 5 (2) outgoing exchange students in 2012. A number of activities have also been implemented to increase collaboration with industry in the region. As a part of these efforts, KTH has joined the Swedish-Brazilian Chamber of Commerce and the Swedish-Brazilian Innovation Centre, CISB. In 2012, 1 (2) student from Brazil began studies at KTH. In addition, a further four students have been admitted to, and paid for, courses of between 30–60 credits. This year, KTH has also managed Swedish participation in the Brazilian scholarship programme Science without Borders. The programme is aimed at Brazilian citizens and financed by the Brazilian state. The period of study is one year and it does not lead to a degree in Sweden. During the autumn, KTH took the decision to offer 29 course packages of 60 credits to approximately 190 students within the framework of this scholarship programme in the autumn of 2013. The level of education in the course package is the equivalent of the first year of the Master programme.

COOPERATION WITH FOREIGN UNIVERSITIES
Strategic collaboration with the University of Illinois, Urbana-Champaign
The KTH collaboration with the University of Illinois, Urbana-Champaign (UI) within the strategic alliance created in 2011 has been strengthened during the year. There are currently forty collaboration projects underway in various subject areas and at different levels, such as mobility at student and researcher level and research projects within fields such as waste management, urban planning and wireless networks. A Statement of Intent regarding future collaboration between UI, KTH, the University of Stockholm and the Karolinska Institutet was signed in April. A summer course on the theme of “Changing the Arctic” attracted approximately 30 students, of whom half were from Swedish institutions and half from UI. The course was held at KTH and included a field trip to Svalbard.

CLUSTER
The CLUSTER network comprises twelve eminent technical universities in Europe. The network has been extended to become a platform and skills base for the development of future joint Master programmes, for applications to various EU programmes, and as a coherent actor in relations with the European Commission. In 2012, strategic collaboration has been established with the IDEA-League and Eurotech networks with the aim of operating joint lobbying activities at EU level. Collaboration between the CLUSTER network and Chinese universities within the SINO-European Engineering Platform, S3EP has been strengthened. A meeting was held at Harbin University in 2012 at which the parties drew up guidelines for joint Master programmes, a graduate school and a summer school.

Nordic Five Tech
The goal for the Nordic Five Tech (N5T) network, which consists of the Nordic region’s five largest technical universities, is to profit from shared strengths and create synergies within education, research and innovation. The network now offers five common Master programmes, a graduate school and a summer school. The Attract Project (Enhancing the Attractiveness of Studies in Science and Technology) was concluded in 2012. Attract was a follow-up to the Swedish “Young Engineer” project and aimed to study ways to increase interest among young Europeans in technical education. The final report concludes with a large number of recommendations which may serve as a basis for future measures and investments. The project was run within CLUSTER and coordinated by KTH. In addition to universities, the project included upper secondary schools and employers. More information can be found at www.attractproject.org.
Collaboration with Pharos University in Alexandria

KTH collaboration with Pharos University in Alexandria (PuA), Egypt, was officially inaugurated in 2012. This collaboration primarily involves KTH validating five PuA Bachelor programmes, with the aim of PuA achieving a standard of education on a par with that of KTH. The programmes concerned are within the fields of mechanical engineering, electrical engineering, petrochemistry, computer technology and architecture. The first group of students to complete their education, monitored by KTH, will graduate in 2014. This collaboration also involves opportunities for student exchanges in the form of short workshops, projects or degree projects. In 2012, ten students from PuA spent three weeks at KTH where they undertook a project assignment under a KTH supervisor.

Collaboration within the Deans’ Forum

KTH has, since 2010, been a member of the newly started network entitled the Deans’ Forum which, in addition to KTH, comprises the University of Tokyo, Massachusetts Institute of Technology (MIT), the University of California, Berkeley, ETH Zürich and Imperial College, London. The network was initiated by the University of Tokyo in order to establish collaboration on a global level regarding shared future issues affecting technical universities.

PARTICIPATION IN INTERNATIONAL PROGRAMMES AND PROJECTS

European Institute of Innovation and Technology (EIT)

According to the KTH Strategic Plan for 2009–2012, KTH is to continue to be a leading partner within the European Institute of Innovation and Technology (EIT). KTH is a partner in two of the first three KICs (Knowledge and Innovation Communities) which were launched within EIT: KIC InnoEnergy and EIT ICT Labs.

EIT ICT Labs has implemented a project structure of approximately 15 overall projects, a Master School and a Graduate School. The Master School Office is one of the projects coordinated by KTH. An agreement in respect of the Graduate School was entered into in 2012. In 2012, the Master School was launched with approximately 120 students enrolled, of whom 94 began studies. Of these, 21 began their studies at KTH, and the remainder at one of the other partner universities in the consortium. KTH offers three tracks within the programme: Digital Media Technology (4 students), Embedded Systems (11 students) and Human Computer Interaction and Design (6 students). Some 37 per cent of the students pay tuition fees (although a number of them are on partial scholarships).

Seven Master programmes are offered within KIC InnoEnergy, of which KTH participates in five. These programmes have been developed in line with a model very similar to Erasmus Mundus, with a consortium of universities behind each programme and a coordinating university with overall responsibility for admissions, programme development and operations. KTH has been assigned to organise a joint admissions system for all programmes from 2013. Students have been admitted to Master studies within the framework of InnoEnergy since 2010. In autumn 2012, 22 students began their first year and 22 their second year of study at KTH. More information can be found in the chapter entitled Research.

Erasmus Mundus

In 2012, KTH acted as coordinator for five Master programmes and three doctoral studies programmes within Erasmus Mundus Action 1. In all, KTH participates in nine Master programmes and five doctoral studies programmes. A total of 431 (353) Erasmus Mundus Action 1 students were registered in 2012, of whom 18 (10) were at doctoral level.

In the spring, a trip was arranged to China to take part in seminars on the Erasmus Mundus programme at four partner universities, and Chinese students who had been admitted to KTH Master programmes were invited to meet KTH representatives. Of the 21 students who attended these meetings, 14 began studies at KTH.

KTH acts as coordinator for two Erasmus Mundus Action 2 projects to encourage mobility between some twenty technical universities in Europe, India and Central Asia. KTH is an active partner in a further eight projects, of which two were aimed at India in 2012. During the year, KTH hosted a total of 13 new scholarship holders within Erasmus Mundus Action 2, of whom seven were at doctoral level, four post-doctorate and two visiting research fellows.

Tempus

Tempus is a programme funded by EU which enables collaboration between EU countries and a number of countries bordering Europe. KTH is a major player in the Tempus programme and was the most successful university in the granting of new projects in 2012 as KTH is participating in eleven of 108 newly approved projects, with overall responsibility for two. KTH currently participates in 31 Tempus projects.

The new projects are located in former Soviet Union republics, North Africa and the Western Balkans. The projects concern the development of new educational programmes in the fields of technology, the environment and sustainable development, geographical information systems (GIS) and geoinformatics, business informatics and the development of infrastructure for support to students, innovation and university administration.

Cooperation in the Baltic Sea Region

In January 2012, the Swedish Institute established a new unit for cooperation within the Baltic Sea Region and launched the Baltic Sea Region Project for Education. KTH received approval in the spring for three projects, and is
coordinator for two of them. The projects involve other Swedish actors including Karolinska Institutet, Östersund Municipality, Blekinge Technical University (BTH) and the National Agency for Higher Education. There are additional partners in Estonia, Latvia, Ukraine, Belarus, Russia, Georgia and Moldova. Each project has a budget of approximately SEK 3 million and will run for three years.

**Marie Curie**

PEOPLE/Marie Curie is one of the four elements of the EU Seventh Framework Programme (FP7) whose basic concept is the mobility of researchers and doctoral students in order to promote innovation and collaboration with industry, and thereby strengthen Europe's competitiveness on the global market. KTH participates in 12 joint doctoral studies programmes (ITN) which recruit students from all over the world, three joint research projects with regions outside Europe (IRSES) and three projects which focus on joint research with industry (IAPP). Seven major new projects in which KTH participates were granted funding in 2012, KTH is coordinator of two of them. In addition, there are a number of smaller, individual mobility projects.

Marie Curie provides funding for salaries for researchers and doctoral students, variable funds, administration, and travel costs and allowances.

**Linnaeus-Palme**

Linnaeus-Palme is an exchange programme targeted at developing countries and financed by Sida. The programme is based on collaboration between higher education institutions and involves the exchange of both students and teaching staff. KTH currently participates in nine projects, four of which were initiated in 2012.

**Stockholm Summer School**

Stockholm Summer School is a collaboration between the University of Stockholm, Karolinska Institutet and KTH whose purpose is to market the common strengths of all three universities and, in the long-term, recruit more international students to Master programmes at each university. The Summer School was held for the first time in the summer of 2012, when five courses, each earning 6 credits, were held during a period of four weeks. A total of 67 students participated in the summer school.
Staff

KTH HR Policy states that it is to be a university where people from different backgrounds and experience work with a common purpose to manage, innovate and deliver knowledge for the society of today and tomorrow. KTH will be a workplace which stimulates the desire for personal growth and personal responsibility. Below is a sample of HR and work environment activities, conducted in 2012 in accordance with KTH HR Policy.

Employees and managers – participation and influence
As a result of collaboration between employers and unions the end of 2011 a second joint employee survey at KTH was carried out. Using the KTH strategic policy documents, the Strategic Plan and HR Policy as points of departure, a number of themes/areas were selected as question areas in the employee survey.

The results, which were compiled and presented in 2012, were very similar to the results from first survey: KTH employees are highly motivated and extremely committed to their work. In order to strengthen employees and managers, activities concerning stress management will be a priority in the spring of 2013 with support from joint funds. The focus on seminars for career development, which began with the help of joint funding in 2011, has continued in 2012. Examples of other areas where support is necessary, according to the employee survey, include increased information on where to turn if discrimination or harassment occur. This will be part of the upcoming diversity project mentioned below.

Gender equality, diversity and equal opportunities
At KTH gender equality, diversity and equal opportunities are vital quality issues. They enable a university that welcomes everyone who is interested in technology and society. For many years KTH has sought to increase the proportion of women among both staff and students. Today, the proportion of women is in excess of 30 per cent of students and nearly 40 per cent of employees. KTH operate in a global environment and currently hosts staff and students from over a hundred nations.

KTH wishes to offer the best study and workplace in which equality issues are mainstreamed into the various fields and also act as support for new thinking and action within these areas. A pre-study on the importance of diversity-related issues for KTH today and tomorrow, with the aim of providing skills on such issues for the entire staff, has been undertaken during the year. Based on this study, a diversity project began in 2012. This project will continue in 2013 and 2014. The intention is that these issues will then be included in regular operations. KTH students have, through the Student Union (THS), also supported these KTH initiatives. THS stresses the importance of introducing these issues early on in education and teaching contexts. The assessment criteria for appointment to an academic post state that the applicant must show insights into gender equality. This is used, among other things, to drive forward the development of the Appointments Board. Members of the Board have been trained on the theme “How can the Board work with gender equality?” Researchers from the KTH research group Gender, Organisation and Leadership have been responsible for this course. During the year, administrative managers and the Chair of the Appointments Board have been offered specific training on gender issues.

Together with Stockholm County Council, Stockholm County Administrative Board, Stockholm County Police and a number of companies, KTH has worked during the year under the theme “Diversity in real life – it’s happening now!” This is a project where participating businesses learn from each other and it is intended both to form public opinion and to transfer knowledge as concerns the county and the community. Using funds from the Delegation for Gender Equality in Higher Education, KTH has continued with a comprehensive gender equality project entitled “An Inventory of Links between Gender and Actual Working Situation within the Faculty”. This project ended in 2012.

The goal was to bring to light any barriers or mechanisms that contribute to gender bias. The project charted seven areas: salaries, working conditions, parenting, career, power and influence, management-driven gender equality activities, transparency and zero tolerance.

The project reported in four performance sections. The first results section revealed the organisational structure in terms of working conditions and employment conditions. The second part dealt with the mechanisms of exclusion and inclusion identified in the faculty. The third part consisted of case studies of how different mechanisms manifested themselves. The fourth and final results section consisted of policy options for achieving a gender equal organisation. In summary it can be stated that women at KTH, generally speaking, do not have an actual work situation that is on equal terms with men.

Going forward the results, which show that KTH has many opportunities for improvement, will be used at KTH in several different ways, both centrally and in the schools. The indicators that have been developed have been made available to the different KTH levels. Case studies developed at workshops and interviews will be used in in-house training at KTH. In 2013, in the first round, the KTH Management Group will be trained in gender equal leadership using the case studies as a point of departure.

Competence and career development
In 2012 KTH continued to invest in skills development and training. In the KTH Strategic Plan for 2009–2012 one objective was a systematic programme for management development to be implemented at the end of the period. KTH now has such a programme that involves three steps. In addition there is a Management Planning Programme entitled Tomorrow’s Academic Leaders (MAL), which is offered jointly by the universities in Stockholm. KTH cen-
The number of teachers has increased by nine full time equivalents this represents an increase of 2 percentage points since 2011.

In the KTH Strategic Plan for 2009–2012, the objective was that the proportion of women KTH faculty would increase from 15 to 20 per cent. The teaching categories included in the faculty are professor, associate professor and assistant professor. The proportion of women faculty is now 19 per cent, which shows that KTH has made real efforts to achieve this objective. On closer analysis, it can also be noted that the number of women faculty increased from 84 full time equivalents to 119, an increase of 42 per cent, while total faculty increased from 572 full time equivalents to 642, an increase of 12 per cent. Consequently half of the increase in the faculty total consists of women.

The number of researchers, research engineers and post docs i.e. staff working primarily with research and research support activities, has increased by 28 full time equivalents to 582 (women by 1 to 148 and men by 27 to 434).

**Professors**

In 2012, the number of employees in the group professor (professor, appointed professor, visiting professor and adjunct professor) has increased by 4 full time equivalents to 299 (women by 6 to 39 and men a decrease of 2 to 260). Professors, including appointed professors, have increased by 5 full time equivalents to 268 (women by 5 to 29 and men unchanged at 239). The proportion of women has increased by 2 percentage points to 11 per cent.

In KTH employment procedures, the opportunity has been introduced to appoint person to the position of professor if the position is of special importance to a particular activity at the university. It is of particular importance that this type of position is properly documented. The President makes such decisions. KTH has so far appointed two professors in this manner.

The number of visiting professors has decreased by 2 full time equivalents to 20 (1 woman has joined to make 9 and men have decreased by 3 to 11). The proportion of women has increased by 9 percentage points to 45 per cent.

The number of adjunct professors had, at the end of 2012, increased by 5 people to 48 (women by 1 to 7 and men by 4 to 41). The full time equivalents correspond to an increase of 1 to 11 (women unchanged at 1 while men had increased by 1 to 10). The proportion of women in terms of number has increased by 1 percentage point to 15 per cent but in terms of full time equivalents the proportion declined by 1 percentage point to 9. During the year, 6 people were recruited as adjunct professors (1 woman and 5 men) as compared with 2011 when 10 people were recruited (1 woman and 9 men). All adjunct professors are employed by KTH but have their principal operations located outside KTH. The position encompasses a minimum of 20 per cent and a maximum of 50 per cent of full-time and most of the adjunct professors receive no salary from KTH.
During the year, 9 people were appointed affiliated professor (1 woman and 8 men) while affiliation for 1 person has ceased (a woman). Consequently at the end of 2012, KTH had 28 affiliated professors (2 women and 26 men). The purpose of the appointment of affiliated professors is primarily to strengthen KTH’s international contact network by linking reputable foreign research colleagues to the university. An affiliation means no financial commitment from KTH and no employment relationship is in place. Affiliate professors are not included in the number of employees and full-time equivalents stated in the Management Report.

The number of associate professors including assistant professors has increased by 12 full time equivalents to 240 (women by 5 to 52 and men by 7 to 188). The proportion of women has increased by 1 percentage point and reached 22 per cent in 2012.

**Affiliated Faculty**

In the autumn of 2012, KTH introduced an affiliate faculty position which may consist primarily of research, or teaching, or a combination of both. These appointments are regarded as strategic instruments for both parties to strengthen and influence the emphasis of a research area, or to strengthen level 1 and 2 education at KTH. In 2012 one woman was appointed to the position affiliated faculty. There is no employment relationship. These individuals are not included in the number of employees and full-time equivalents stated in the Management Report.

Researchers and research engineers have increased by 16 full time equivalents to a total of 488 (women by 3 to 128 and men by 13 to 360). The proportion of women is unchanged at 26 per cent as compared with 2011.

**Post doctoral**

The number of post docs has increased by 12 full time equivalents to 94 (women have decreased by 2 to 20 and men have increased by 14 to 74). The proportion of women is 21 per cent, which is a decrease of 6 percentage points compared with 2011. Post doc positions are limited-period for up to two years and were introduced in 2009.

**Doctoral students with employment or educational grants**

In 2012 doctoral students with employment or educational grants increased by 85 full time equivalents to a total of 1,034 (women by 28 to 310 and men by 57 to 724). Of the 1,034, 68 doctoral students enjoyed educational grants (22 women and 46 men). The proportion of female doctoral students with employment or educational grants was 30 per cent which is unchanged as compared with 2011.

**Technical and administrative staff**

Technical and administrative staff, including library staff, has increased by 34 full time equivalents to a total of 949 (women by 24 to 574 and men by 10 to 375). The proportion of women was unchanged at 60 per cent as compared with 2011.
Premises

KTH PREMISES IN A TIME OF EXPANSION
At the end of 2012, KTH had approximately 261,000 (238,000) m² of floor space at its disposal, an increase of nine per cent compared to the situation the previous year. Its largest landlord is Akademiska Hus which owns all the KTH premises on the Main Campus, in Kista, Solna and Huddinge. The Akademiska Hus share of KTH rented building stock is approximately 80 per cent. The proportion of vacant or unused space at the end of 2012 was extremely low, about one per cent of rented floor space. Consequently the space available to meet increasing premises requirements as a result of KTH expansion is currently very limited.

In 2012 decisions were taken concerning several extensive new builds and redevelopment projects at the same time as previously planned construction projects were now ready to start. Some projects that, in the next few years, will help to tackle the critical shortage of space at KTH are listed below:

- The remodelling of former Red Cross Hospital was completed in December 2012 and in early 2013, upper management and the greater part of the university administration will move into its modern and efficient office space. In total, more than 250 people will have their workplaces in the building which consists of more than 7,300 m².
- In December 2012, ground was broken for the new School of Architecture and the new KTH entrance on the Main Campus and autumn 2015 will see the building ready for occupancy. The project consists of over 11,000 m² of which 7,000 m² is new construction.
- The remodelling and extension of Building 14 for Engineering Sciences, totally more than 10,000 m², will be completed in the spring of 2013. In addition to the upgrading of existing premises the School will have access to an additional approximately 2,500 m².
- Several major construction projects are underway in the Civil Engineering section of the Main Campus. The conversion and extension of Building 11 is ongoing and the new premises will be ready for occupancy in January 2014. Furthermore, extensive adaptation of Building 12 will be carried out as a result of the University Board decision to move Bachelor of Science degree programmes in structural engineering and design from Haninge to the Main Campus. A new teaching building will also be constructed in the Civil Engineering section. Totally more than 6,000 m² will be added in this area when these projects have been completed. Preliminary occupancy date autumn 2015.
- In the autumn of 2012, the University Board took a decision that the School of Technology and Health will, in the longer term, concentrate its operations to Huddinge directly adjacent to Karolinska University Hospital. A premises construction project has been initiated with the aim of the School moving into its new premises in Huddinge in the late autumn of 2015.
- In the autumn of 2011 a decision was taken that the ICT School in Kista would gather all its operations in the Electrum Block area and leave the Forum Building. This decision was taken partly because it was necessary to reduce premises in Kista, and partly because Stockholm University has taken a decision to leave Forum, which means that certain synergy gains will cease. The design of the additional premises in Electrum is now complete and a new rental contract signed. When the ICT School moves in, in the autumn of 2014, their floor space will be reduced by just over 4,000 m².

STUDENT AND GRADUATE HOUSING
According to a government decision, KTH is permitted to provide sub-let apartments for students and guest researchers. This permit is valid 2010–2015. KTH is currently brokering a large number of student apartments and rooms to exchange students and foreign masters students. In 2012, KTH had over 1,310 living spaces in 1,037 student rooms and apartments. During the year these were rented to 1,522 students. Occupancy has been approximately 80 per cent over the entire year.

FINANCES
Compared with the previous year, costs for premises increased by 11 per cent, from SEK 578 to SEK 644 million. Of this increase, SEK 45 million is due to changes in accounting methods after comments by the National Audit Office. Premises at AlbaNova are rented jointly by KTH and Stockholm University and, up until 2011, costs for premises were allocated according to utilisation. After comments from the National Audit Office, all premises costs for AlbaNova were charged to KTH. The remaining increase was partly due to increased need for premises for SciLifeLab (SEK 10 million) and for some smaller-scale rentals on the Main Campus. The actual increase in costs for premises lies at about 3 per cent. Fuel costs, mainly electricity and cooling, increased from SEK 54 to SEK 57 million. These costs account for approximately 9 per cent of total premises costs, which is a decrease compared with the previous year. Costs of providing housing for foreign students and visiting researchers have declined marginally and amounted to almost SEK 49 million.
Finances – outcome, resource utilisation and financing

**FINANCIAL OUTCOME AND CHANGES IN CAPITAL**
Outcome for the year is SEK 58 million, which is an expected decrease relative to the preceding year’s outcome of SEK 108 million. The recent years’ positive results are largely explained by the increased allocation of funds for strategic research areas (SRAs) and the establishment of the activities that took place within them. Now operations are in full swing which increases costs. Within levels 1 and 2 there is an expected reduction partly due to the introduction of tuition fees that has led to fewer students and one reduced ceiling amount. The KTH objective is to reach the same number of third-country students that KTH hosted before the introduction of tuition fees i.e. one thousand new students paying fees by autumn term of 2016.

KTH turnover amounted to SEK 4,214 million, measured as operating revenues including grants for the financing of transfers, and has increased by 7 per cent. KTH’s agency capital amounts to SEK 663 million, representing about 16 per cent of turnover as defined above. The long-term KTH objective is that agency capital will amount to 10 per cent of sales. Agency capital in research and research education is this year 19 (18) per cent of sales. KTH’s agency capital allows for strategic initiatives in accordance with the KTH Strategic Plan for 2013–2016.

**REVENUES**
Operating revenues increased by 6 per cent and are now SEK 3,948 million.

**First and second level education**
Revenues at these educational levels constitute almost 32 per cent of total revenues which is a lower proportion than in previous years. Revenues amounted to SEK 1,247 million which is an increase of about 3 per cent as compared with the preceding year. Revenues from levels 1 and 2 government allocations have decreased by 3 per cent and amounted to SEK 1,025 million. Revenues from fees and other charges have increased by about 53 per cent and amounted to SEK 172 million. This sharp increase is mainly due to charges in the form of tuition fees, the reintroduction of gross accounting of premises for the Physics Centre AlbaNova and increased revenues from commissioned education. Total tuition fees reached SEK 30 million, which is comparable with SEK 9 million 2011.

**Research and doctoral studies**
Revenues from research and doctoral studies accounted for nearly 68 per cent of total revenues. Revenues amounted to SEK 2,701 million in 2012 which is an increase of about 8 per cent compared with previous years.

Revenues from research and doctoral study government allocations increased by about 8 per cent and amounted to SEK 97 million excluding transfers. Transfers are implemented to other universities in SRA projects. Revenues from fees and other charges have increased by about 23 per cent. This increase can be primarily explained by the reintroduction of gross accounting of premises for the Physics Centre AlbaNova. Grant revenues increased by SEK 85 million and the majority of this increase was due to utilisation of unused grants which, for first time in years, decreased.
FINANCES – OUTCOME, RESOURCE UTILISATION AND FINANCING

COSTS
Operating costs increased by almost 8 per cent and now amount to SEK 3,891 million. Operations within research and doctoral studies have become an increasingly large share of KTH operations.

First and second level education
Costs for levels 1 and 2 constitute 32 per cent of total costs which is lower than in previous years. Costs amounted to SEK 1,250 million which is an increase of nearly 4 per cent compared with previous years. Staff costs have risen by SEK 17 million which is an increase of just over 2 per cent. Premises costs have increased by SEK 21 million and can primarily be explained by the reintroduction of gross accounting for premises at Fysikcentrum AlbaNova.

Operating costs have increased by SEK 8 million and more than half of these costs are located in commissioned education which expanded significantly during the year.

Research and doctoral studies
Costs for research and doctoral studies represent 68 per cent of total costs. Costs amounted to SEK 2,641 million, an increase of 10 per cent compared with previous years. Staff costs have increased by SEK 158 million which is an increase of about 11 per cent. The number of full time equivalent positions in research and doctoral studies increased by about 120 during the year due to the ongoing expansion of operations.

Premises costs have increased by SEK 44 million and can primarily be explained by the reintroduction of gross accounting for premises in Fysikcentrum AlbaNova and additional rental costs related to Science for Life Lab facilities in Solna. Operating costs have increased by SEK 40 million of which increased costs for travel, goods and services account for nearly SEK 25 million. Depreciation costs increased by SEK 7 million as a result of major investments in tangible fixed assets in 2011.
Foundations and Donations

FOUNDATION MANAGEMENT
KTH currently manages 114 private foundations with legal requirements for administration by KTH. These foundations have been established based on various donations to KTH over the course of its history. In 2012, one new foundation was formed and one was exhausted and consequently closed down. The KTH – India Scholarship Foundation was established during the year. Capital amounted to MSEK 5 at the time of the donation. This foundation enables two scholarship-holders per academic year from India to study at second level at KTH. The Foundation provides grants for both student tuition fees and living costs which makes it unique among KTH foundations.

The two oldest foundations managed by KTH have their origin in donations from 1866, when they were donated to the KTH predecessor, Kongl. Teknologiska Institutet. These gifts came from Manufacturer Johan Michaelsson, former member of the Institute’s Board of Directors. Both donations were intended to create scholarships for indigent students who had distinguished themselves for hard work, were of good heritage and honourable behaviour. These foundations still distribute scholarships to students at KTH.

Purpose management
Each foundation has a purpose stated in its donation documentation. The largest group of KTH foundations, approximately 50, are intended for students at first and second levels. From these foundations a total of 387 scholarships were distributed this year to a total value of SEK 6.6 million. Approximately SEK 3 million of these funds came from the largest foundation, the Henrik Göransson Sandvik Scholarship Fund, with a capital of SEK 132 million which is primarily to be invested in stocks related to the Sandvik AB Group of companies. Some 30 foundations award travel grants to teachers, researchers and doctoral students. During the year, decisions were made to distribute SEK 4 million from these foundations. Other foundations contribute to a particular branch of research at KTH. During the year SEK 8.1 million was distributed to such operations at KTH.

The second largest foundation managed by KTH is the Great Prize of the 1944 Donation. The prize in 2012 was SEK 1.2 million. The donor, who wished to remain anonymous, stipulated that the Prize was to be awarded to a Swedish citizen who, through ground-breaking discovery, original application or artistic achievement, has been of great importance to Sweden. The 2012 Great Prize was awarded to Daniel Ek, entrepreneur and founder of Spotify for his innovative use and successful commercialisation of IT at high, international level. He has contributed to fundamentally changing the ways in which people consume music. Daniel Ek is the youngest person ever awarded this Prize.

The foundations pay an annual management fee to KTH for costs that occur in connection with their management. In 2012 these fees amounted to SEK 1.85 million.

Capital management
Capital is managed by an external discretionary investment manager. Consequently this manager is entitled to carry out transfers within the framework outlined in the KTH Investment Policy for its foundations. Total foundation assets were SEK 600 million (SEK 555 million in 2011).

Figure 20
SIZE AND NUMBER OF FOUNDATIONS
Total 600 MSEK at end of December 2012

<table>
<thead>
<tr>
<th>MSEK</th>
<th>Number</th>
<th>Capital, MSEK</th>
</tr>
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<tbody>
<tr>
<td>Foundations, 15–132,2</td>
<td>10</td>
<td>342</td>
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<tr>
<td>Foundations, 5–15</td>
<td>18</td>
<td>146</td>
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<tr>
<td>Foundations, 1–5</td>
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<tr>
<td>Foundations up to 1</td>
<td>46</td>
<td>24</td>
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<tr>
<td>TOTAL</td>
<td></td>
<td>114 600</td>
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FUNDRAISING
Fundraising is a strategic, systematic, long-term activity aimed at securing future revenues for KTH through donations and private financing and is to be regarded as a complement to other sources of financing. The above-mentioned foundation, the KTH – India Scholarship Foundation, is one example of donations generated by KTH fundraising activities.

The largest donation to KTH during the year came from the Erling-Persson Family Foundation and was donated to Professor Mats Danielsson and his research team at the School of Engineering Sciences. Over a three-year period they will receive a total of SEK 22 million for research into medical imaging physics and CT scans.

During the year a number of investments in high-specified medical equipment have been made using funds from last year’s largest donation which came from Kerstin and Rune Jonasson. Funds from this donation will also be used to finance the KTH share of a cooperation agreement concerning exchange of researchers with KAIST, the leading technical university of South Korea.
### Financial Statement

In order to provide an overall picture that reflects the character of KTH operations, the Financial Statement is shown not only for this and the previous financial years but also for a five-year period. SEC thousand

#### Operating revenues

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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Government grants</td>
<td>1</td>
<td>2,011,781</td>
<td>1,970,901</td>
<td>1,992,218</td>
<td>1,779,215</td>
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<tr>
<td>Revenues from tuition fees and other charges</td>
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<td>384,963</td>
<td>286,027</td>
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<td>Revenues from grants</td>
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<td>1,431,031</td>
<td>1,205,385</td>
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<td>Financial income</td>
<td>3</td>
<td>29,035</td>
<td>24,563</td>
<td>8,354</td>
<td>9,126</td>
</tr>
</tbody>
</table>

**Total operating revenues**

|-------|-----------|-----------|-----------|-----------|-----------|

#### Operating costs

<table>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td>Staff costs</td>
<td>4</td>
<td>2,372,901</td>
<td>2,197,870</td>
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<td>Costs for premises</td>
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<td>540,793</td>
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<tr>
<td>Other operating costs</td>
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<td>Depreciation</td>
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</tbody>
</table>

**Total operating costs**

<table>
<thead>
<tr>
<th></th>
<th>3,891,163</th>
<th>3,604,494</th>
<th>3,286,213</th>
<th>2,998,496</th>
<th>2,937,043</th>
</tr>
</thead>
</table>

**Total operating outcome**

|       | 56,676 | 108,029 | 193,461 | 196,968 | 55,229 |

**Outcome from shares of subsidiary companies and other interests**

| Note | 5 | 1,091 | −463 | 278 | −515 | 2,429 |

**Transfers**

<table>
<thead>
<tr>
<th>Note</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Funds allocated from government budget for financing of grants</td>
<td>1</td>
<td>131,048</td>
<td>92,368</td>
<td>59,857</td>
<td>20,362</td>
</tr>
<tr>
<td>Funds allocated from government agencies for financing of grants</td>
<td>101,428</td>
<td>93,573</td>
<td>86,171</td>
<td>94,507</td>
<td>95,787</td>
</tr>
<tr>
<td>Other funds received for financing of grants</td>
<td>34,001</td>
<td>42,954</td>
<td>47,917</td>
<td>45,883</td>
<td>45,883</td>
</tr>
<tr>
<td>Grants made</td>
<td>266,478</td>
<td>228,296</td>
<td>191,945</td>
<td>100,753</td>
<td>156,245</td>
</tr>
</tbody>
</table>

**Outcome of transfers**

| Note | 6 | 57,767 | 107,565 | 193,740 | 196,452 | 57,658 |

**CHANGES TO CAPITAL FOR YEAR**

| Note | 6 | 57,767 | −3,746 | 502 | 4,690 | 60,812 | 113 |

---

### Financial Statement per operational area

**SEK thousand**

**Operating revenues**

<table>
<thead>
<tr>
<th>Note</th>
<th>Undergraduate education</th>
<th>Research/Doctoral studies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>First and second level studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government grants</td>
<td>1</td>
<td>2,011,781</td>
</tr>
<tr>
<td>Revenues from tuition fees and other charges</td>
<td>2</td>
<td>384,963</td>
</tr>
<tr>
<td>Revenues from grants</td>
<td>3</td>
<td>1,522,060</td>
</tr>
<tr>
<td>Financial income</td>
<td>3</td>
<td>29,035</td>
</tr>
</tbody>
</table>

**Total operating revenues**

<table>
<thead>
<tr>
<th></th>
<th>3,947,839</th>
<th>1,191,270</th>
<th>15,147</th>
<th>40,822</th>
<th>2,609,911</th>
<th>90,679</th>
</tr>
</thead>
</table>

**Operating costs**

<table>
<thead>
<tr>
<th>Note</th>
<th>Undergraduate education</th>
<th>Research/Doctoral studies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>First and second level studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Staff costs</td>
<td>4</td>
<td>2,372,901</td>
</tr>
<tr>
<td>Costs for premises</td>
<td>643,665</td>
<td>227,322</td>
</tr>
<tr>
<td>Other operating costs</td>
<td>678,153</td>
<td>190,278</td>
</tr>
<tr>
<td>Financial costs</td>
<td>3</td>
<td>7,655</td>
</tr>
<tr>
<td>Depreciation</td>
<td>188,791</td>
<td>31,702</td>
</tr>
</tbody>
</table>

**Total operating costs**

<table>
<thead>
<tr>
<th></th>
<th>3,891,163</th>
<th>1,198,616</th>
<th>15,649</th>
<th>36,142</th>
<th>2,550,190</th>
<th>90,565</th>
</tr>
</thead>
</table>

**Total operating outcome**

|       | 56,676 | −7,346 | −502 | 4,690 | 59,721 | 113 |

**Outcome from shares of subsidiary companies and other interests**

| Note | 5 | 1,091 | 0 | 0 | 0 | 1,091 |

**Transfers**

<table>
<thead>
<tr>
<th>Note</th>
<th>Undergraduate education</th>
<th>Research/Doctoral studies</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>First and second level studies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Funds allocated from government budget for financing of grants</td>
<td>1</td>
<td>131,048</td>
</tr>
<tr>
<td>Funds allocated from government agencies for financing of grants</td>
<td>101,428</td>
<td>17,855</td>
</tr>
<tr>
<td>Other funds received for financing of grants</td>
<td>34,001</td>
<td>728</td>
</tr>
<tr>
<td>Grants made</td>
<td>266,478</td>
<td>29,960</td>
</tr>
</tbody>
</table>

**Outcome of transfers**

| Note | 0 | 0 | 0 | 0 | 0 | 0 |

**CHANGES TO CAPITAL FOR YEAR**

| Note | 6 | 57,767 | −7,346 | −502 | 4,690 | 60,812 | 113 |
## Balance Sheet

SEK thousand

### ASSETS

<table>
<thead>
<tr>
<th>Note</th>
<th>2012-12-31</th>
<th>2011-12-31</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Intangible fixed assets</td>
<td>7</td>
<td>3,661</td>
</tr>
<tr>
<td>Development costs brought forward</td>
<td></td>
<td>237</td>
</tr>
<tr>
<td>Intellectual rights and other intangible assets</td>
<td></td>
<td>3,424</td>
</tr>
<tr>
<td><strong>II. Tangible fixed assets</strong></td>
<td>8</td>
<td>538,465</td>
</tr>
<tr>
<td>Improvements to non-owned real estate</td>
<td></td>
<td>165,972</td>
</tr>
<tr>
<td>Machines, inventory items, installations etc</td>
<td></td>
<td>353,848</td>
</tr>
<tr>
<td>Construction in progress</td>
<td></td>
<td>13,661</td>
</tr>
<tr>
<td>Advances concerning tangible fixed assets</td>
<td></td>
<td>4,984</td>
</tr>
<tr>
<td><strong>III. Financial fixed assets</strong></td>
<td>9</td>
<td>20,904</td>
</tr>
<tr>
<td>Interests in wholly and partially-owned companies</td>
<td></td>
<td>20,814</td>
</tr>
<tr>
<td>Other investments held as fixed assets</td>
<td></td>
<td>90</td>
</tr>
<tr>
<td><strong>VI. Receivables</strong></td>
<td>10</td>
<td>114,338</td>
</tr>
<tr>
<td>Receivables – customers</td>
<td></td>
<td>34,951</td>
</tr>
<tr>
<td>Receivables – other government agencies</td>
<td></td>
<td>76,855</td>
</tr>
<tr>
<td>Other receivables</td>
<td></td>
<td>2,532</td>
</tr>
<tr>
<td><strong>VII. Cut off items</strong></td>
<td>11</td>
<td>452,027</td>
</tr>
<tr>
<td>Prepaid expenses</td>
<td></td>
<td>129,249</td>
</tr>
<tr>
<td>Accrued grant revenues</td>
<td></td>
<td>314,459</td>
</tr>
<tr>
<td>Other accrued revenues</td>
<td></td>
<td>8,320</td>
</tr>
<tr>
<td><strong>VIII. Settlement with Government</strong></td>
<td>12</td>
<td>0</td>
</tr>
<tr>
<td>Settlement with Government</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>IX. Current investments</strong></td>
<td>13</td>
<td>1,468,540</td>
</tr>
<tr>
<td>Securities and interests</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td><strong>X. Cash and cash equivalents</strong></td>
<td>14</td>
<td>1,318,062</td>
</tr>
<tr>
<td>Balance and interest-bearing account at Swedish National Debt Office</td>
<td></td>
<td>150,478</td>
</tr>
<tr>
<td>Cash and cash equivalents</td>
<td></td>
<td>1,318,062</td>
</tr>
</tbody>
</table>

**TOTAL ASSETS**

| 2,597,936 | 2,556,954 |

### CAPITAL AND LIABILITIES

<table>
<thead>
<tr>
<th>Note</th>
<th>2012-12-31</th>
<th>2011-12-31</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Agency Capital</td>
<td>15</td>
<td>662,608</td>
</tr>
<tr>
<td>Government Capital</td>
<td></td>
<td>18,159</td>
</tr>
<tr>
<td>Outcome from shares of/in subsidiary companies and other interests</td>
<td></td>
<td>2,199</td>
</tr>
<tr>
<td>Changes to capital brought forward</td>
<td></td>
<td>584,483</td>
</tr>
<tr>
<td>Changes to capital according to Financial Statement</td>
<td></td>
<td>57,767</td>
</tr>
<tr>
<td><strong>III. Provisions</strong></td>
<td>16</td>
<td>34,427</td>
</tr>
<tr>
<td>Provisions for pensions and similar commitments</td>
<td></td>
<td>9,089</td>
</tr>
<tr>
<td>Other provisions</td>
<td></td>
<td>25,337</td>
</tr>
<tr>
<td><strong>IV. Liabilities etc.</strong></td>
<td>17</td>
<td>767,286</td>
</tr>
<tr>
<td>Loans from Swedish National Debt Office</td>
<td></td>
<td>377,408</td>
</tr>
<tr>
<td>Accounts payable – other government agencies</td>
<td></td>
<td>76,311</td>
</tr>
<tr>
<td>Accounts payable – suppliers</td>
<td></td>
<td>94,062</td>
</tr>
<tr>
<td>Other accounts payable</td>
<td></td>
<td>218,601</td>
</tr>
<tr>
<td>Deposits</td>
<td></td>
<td>904</td>
</tr>
<tr>
<td><strong>V. Cut-off items</strong></td>
<td>19</td>
<td>1,133,616</td>
</tr>
<tr>
<td>Accrued expenses</td>
<td></td>
<td>106,130</td>
</tr>
<tr>
<td>Unutilised grants</td>
<td></td>
<td>1,010,866</td>
</tr>
<tr>
<td>Other prepaid revenues</td>
<td></td>
<td>16,620</td>
</tr>
</tbody>
</table>

**TOTAL CAPITAL AND LIABILITIES**

| 2,597,936 | 2,556,954 |

### CONTINGENT LIABILITIES

- Government guarantees for loan and credits: none
- Other contingent liabilities: none
Degrees awarded during 2012

**BIOLOGICAL SCIENCES**

**Biological Physics**

GUDEVALL, KAROLIN

Development of microchip-based assays to study immune cell interactions at the single cell level

HANSSON, JONAS

Microfluidic blood sample preparation for rapid sepsis diagnostics

KHORSHIDI, MOHAMMAD ALI

Automatic Counting and Migration Behavior Analysis of Immune Cells imaged in Microchips

RAY, ARJUN

Quality assessment of protein models

**COMPUTER AND INFORMATION SCIENCE**

Computer Science

DE CARVALHO GOMES, PEDRO

Sound Modular Extraction of Control Flow Graphs from Java Bytecode

SOLEIMANIFARD, SIAVASH

Procedure – Modular Verification of Temporal Safety Properties

**ELECTRICAL ENGINEERING, ELECTRONIC ENGINEERING, INFORMATION ENGINEERING**

Electrical Engineering

KOYOUIMDIEVA, SYLVIA TODOROVA

Opportunistic Content Distribution: A System Design Approach

STURK, CHRISTOPHER

Structured Model Reduction and its Application to Power Systems

ZHOU, HELIN

Some Properties of Lightning Flashes to a Tall Tower on Mountain Top

Electronic and Computer Systems

ANSARI, MUHAMMAD ADEEL

TDMA for Low Sampling Rate IR-LWR Receivers

GAO, IRIS JIE

Intelligent and Interactive Package Based on RFID and WSN

MANOLOPOULOS, VASILEIOS

Security and Privacy in Smartphone Based Intelligent Transportation Systems

RAHMIAN, FATEMEH

Enabling Internet-Scale Publish / Subscribe in Overlay Networks

TAO, SHA

Mobile Phone-based Vehicle Positioning and Tracking and its Application in Urban Traffic State Estimation

Electrical Systems

CHOMPDOOBUTGOOL, YUWA

Concepts for Power System Small Signal Stability Analysis and Feedback Control Design Considering Synchronphasor Measurements

EDSTROM, FREDRIK

On Risks in Power System Restoration

**KHAM, KASHIF**

Design of a Permanent-Magnet Assisted Synchronous Reluctance Machine for a Plug-in Hybrid Electric Vehicle

**KIIZA, RESPICIUS**

Effect of HV Impulses on Partial Discharge Activity in Oil-Imregnigated Paper Insulation

**MALIK, NAVEED-UR-REHMAN**

Analysis and Control Aspects of Brushless Induction Machines with Rotating Power Electronic Converters

**SCHARFF, RICHARD**

On Distributed Balancing of Wind Power Forecast Deviations in Competitive Power Systems

**VARDANYAN, YELENA**

On stochastic programming for short-term hydropower planning

**Huo, ChunQing**

Modeling high power impulse sputtering magnetron discharges

**HÖÖK, JOSEF**

Variance reduction methods for numerical solution of plasma kinetic diffusion

**Communication Systems**

FERRER COLL, JAVIER

RF Channel Characterization in Industrial, Hospital and Home Environments

**JIMENEZ CONTRERAS, RAÚL**

Kademlia on the Open Internet – How to Achieve Sub-Second Lookups in a Multimillion-Node DHT Overlay

**ZHAO, HAO**

Integrated Security Platform for Mobile Applications

**ÖZYAGCI, ALI NAZMI**

Selfish Dynamic Spectrum Access in Multichannel Wireless Networks

**BRUHN, BENJAMIN**

Fabrication and characterization of single luminescing quantum dots from 2D silicon nanostructures

**CHUGHTAI, MOHSAN NIAZ**

Study of physical layer impairments in high speed optical networks

**DONG, LIN**

Optical Properties of Nanoparticles in Composite Materials

**YAR, MAZHER AHMED**

Development of Nanostructured Tungsten Based Composites for Energy Applications

**KHAMIT, SAHLATAN**

Real-Time Spectrum Access in Heterogeneous Wireless Networks

Automatic Control

**ANNERGREEN, MARIETTE**

ADMM for f2 Regularized Optimization Problems and Applications Oriented Input Design for MPC

**FAROKHI, FARHAD**

Decentralized Control Design with Limited Plant Model Information

**HERDEIRO TEIXEIRA, ANDRÉ**

Towards Secure and Reliable Networked Control Systems

**HÄGG, PER**

Using Structural Information in System identification

**Telecommunication**

FARHADI, HAMED

Interference Alignment and Power Control for Wireless Interference Networks

**GABRY, FRÉDÉRIC GILBERT**

Cooperation for Society in Wireless Networks

**GIRNYK, MAKSYM**

Cooperative Communication for Multi-User Cognitive Radio Networks

**SUNDMAN, DENNIS**

Compressed Sensing Algorithms and Applications

**ZOU, ZHENHUA**

Real-time wireless communication with per-packet deadlines

**PHILOSOPHY, ETHICS AND RELIGION**

**Philosophy**

NORSTROM, PER

Technology education and non-scientific technological knowledge

**PHYSICAL SCIENCES**

Physics

**GHAZI MORADI, FARNAZ**

In-Beam Spectroscopy of the Neutron Deficient Nuclei 92Pd and 162Ta.

**IN-Beam Spectroscopy of the Neutron Deficient Nuclei 92Pd and 162Ta.**

Clouds 2011 flight results and 2012 pre-flight predictions

**LUNDMAN, CHRISTOPHER**

Photospheric emission in gamma-ray bursts

**SUVANTSETSEG, ERDENECHIMEG**

Design studies of ELECTRA: European Lead-Cooled Training Reactor

**Theoretical Physics**

MEIER, HANNES

Superfluid phase transitions in disordered systems

**HEALTH SCIENCES**

**Technology and Health**

LAGERSTEDT, MARIANNE

Command and control in a complex form of care – about needs and possibilities of command and control for a safer care in the home

**MARQUEZ RUIZ, JUAN CARLOS**

On the Feasibility of Using Textile Electrodes for Electrode Biomechanical Measurements

**ORHAN, IYABIHIM**

Performance Monitoring and Control in Wireless Sensor Networks
INDUSTRIAL BIOTECHNOLOGY

Biotechnology

KONRAD, ANNA
Development of a covalent site-specific antibody labeling strategy by the use of photoactivable 2 domains

SUNDÉRBERG, MÄRTEN
Protein microarraying for validation of affinity binders

YUAN, CHUNZE
The Study of In-IV Semiconductor Nanocrystral Sensitized Solar Cells

CHEMICAL SCIENCES

Chemistry

DANIELSSON, JAKOB
Stereochemical Nucleophilic Additions to Aldehydes and Synthesis of α-Amino-β-Hydroxy-Esters

CHEMICAL ENGINEERING

Fibre and Polymer Science

AMINLASHGARI, NINA
SALDI-MS Method Development for Analysis of Pharmaceuticals and Polymer Degradation Products

IBN YAICH, ANAS
Wood Hydrolytate Barriers

SAADATMAND, SOHEIL
Design of New Bioresource Packaging from Wood Hydrolysates

Chemical Engineering

DEGERMAN ENGELDT, JOHNNY
Predicting Electrochromic Smart Window Performance

Corrosion Science

LEVIN, MARTINA
Application of copper corrosion inhibitors in mineral oil: Surface analytical studies and corrosion mitigation evaluations

Polymer Technology

GALLAND, SYLVAIN
Cellulose network materials — compression molding and magnetic functionalization

OLSSON, SARA
Enhancing UV protection of Clear Coated Wood by utilizing Reactive UV-absorber and Epoxy Functionalized Soybean Oil

PERSSON, JOHANNA
Birch xylan modification by lactate grafting

SALAJKOVA, MICHAELA
Nanocelluloses — surface modification and use in functional materials

SUN, YANG
The Role of Computer-Aided Design and Surface Chemistry on Cell-Scaffold Interactions

SVENSSON, MARIE
Modification and Utilization of Wood Hydrolysates

UNDIN, JENNY
Synthesis of Functional Degradable Polymers by Radical Ring-Opening Polymerization

ARTS

Architecture

GUSTAFSSON, STIG
IT i lokalaomhället – konumentmaket eller operaträdgårdar?

History of Architecture

KIHLMANN, JOHAN
Vällingby and the cultural heritage: Preservation and renewal of a community centre

MECHANICAL ENGINEERING

Energy Technology

ANGHEL, IONUT GHEORGHE
Experimental Study of Post-Dryout Heat Transfer in Annuli with Flow Obstacles

GOMEZ GALINDO, MARIA FERNANDA
Electricity access for human development in the Brazilian Amazon

JARONIN, MARIA
Theoretical and Computational Study on the Onset of Heat Transfer Deterioration in Supercritical Water

OLWA, JOSEPH
Investigation of Thermal Biomass Gasification for Sustainable Small Scale Rural Electric Generation in Uganda

SAHA, RANJAN
Aerodynamic Investigations of a High Pressure Turbine Vane with Leading Edge Contouring at Endwall in a Transonic Annular Sector Cascade

VADIEI, AMIR
Energy Analysis of the Closed Greenhouse Concept Towards a Sustainable Energy Pathway

Vehicle and Maritime Engineering

TIKOJA, HEIKI
Acoustic Characterization of Turbochargers and Pipe Terminations

AEROSPACE ENGINEERING

OTERO SOLA, EVELYN
Acceleration of Compressible Flow Simulations with Edge Using Implicit Time Stepping

Aeronautics

JANSSON, NATASCHA
Analysis of Dynamic Flight Loads

Vehicle Engineering

EDRÉN, JOHANNES
Exploring force allocation control of over actuated vehicles.

Production Engineering

DENCKER, KERSTIN
An Analysis of the Proactive Approach as a Potential Tool for Adaptability in Production Systems

HYLL, CAROLINE
Infrared Emissivity of Paper — Method development, Measurements and Application

REPO, JARI
Condition Monitoring of Machine Tools and Machining Processes using Internal Sensor Signals

SALSINHA NEVES, PEDRO MIGUEL
System Evaluation And Learning in Evolvable Production Systems: Preliminary Considerations and research directions

SU, RONG
Assessment of optical coherence tomography for metrology applications in high-scattering ceramic materials

WANNER, BERTIL
Strategies for Reducing Vibrations during Milling of Thin-walled Components

ABBAS, SAEED
Characterization of airborne particles from rail traffic

AGHAALI, HABIB
On-Engine Turbocharger Performance Considering Heat Transfer

BIEHL, MATTHIAS
Supporting Model Evolution in Model-Driven Development of Automotive Embedded Systems

BÖRJESSON, FREDRIK
Approaches to Modularity in Product Architecture

CHA, MATTHEW
Nonlinear viscoelastic behavior of compliant joint bearings

DEMBINSKI, HENRIK
Flow measurements using combustion image velocimetry in diesel engines

KÖNIGSSON, FREDRIK
Advancing the Limits of Dual Fuel Combustion

ZHU, YI
Adhesion in the wheel-rail contact under contaminated conditions

Fluid Mechanics

FALLENBIUS, BENGT
A new experimental setup for studies on wake flow instability and its control

Technical Acoustics

ELSAADANY, SARA
Investigation and optimization of the acoustic performance of exhaust systems

NADAMPALLI, RAVI
Interface Damping: Characterization and Implementation

MATHEMATICS

Mathematics

HEINRICH, KATHARINA
The space of Cohen-Macaulay curves

NÖRÉN, PATRIK
Algebraic and Geometric Combinatorics of Graphs

PETERSEN, DAN
Admissible covers, modular operads and modular forms

Applied and Computational Mathematics

HAMDI, ALI
On the Neumann eigenvalue approach to optimal switching and pricing Bermudan options
MATERIALS ENGINEERING

Solid Mechanics
BIASSETTI, JACOPO
On the interplay between hemodynamics and biochemistry of the normal and aneurysmatic abdominal aorta
Lightweight Structures
JOHNSON, BERTIL
Industrial engineering systems for manufacturing of welded structures exposed to fatigue
Materials Science
LU, SONG
First principles investigations of Planar Defects
TAN, ZHE
Modeling of Initial Mold Filling in Teeming Process Considering a Trumpet
Metallurgical Process Science
BISWAS, AMIT KUMAR
Thermochemical behavior of pretreated biomass
PAL, MAYUR
Modeling of Induction Stirred Ladle
PERSON, FREDRIK
A Study of Factors Affecting the Particle Size for Water Atomized Metal Powders
SAFAVI NICK, SEYED REZA
Mathematical Model of the Solid Flow Behavior in a Real Dimension Blast Furnace
SONG, ZHILI
A Numerical Investigation on VOD Nozzle Jets
Pulp and Paper Chemistry and Technology
ANKERFORS, MIKAEL
Nanofibrillated cellulose: Energy-efficient preparation techniques and key properties
FALL, ANDREAS
Cellulose nanofibril materials with controlled structure: The influence of colloidal interactions
GUSTAFSSON, EMIL
Tailoring adhesion and wetting properties of cellulose fibers and model surfaces
KARABULUT, EREDEM
Tailored layer-by-layer films of nanofibrillated cellulose
SVENSSON, ANNA
Nanocomposites made from nanoporous cellulose fibers
UTSEL, SIMON
Surface modification of cellulose-based fibres for use in advanced materials
Engineering Mechanics
DEUSEBIO, ENRICO
Numerical investigation of rotating and stratified turbulence
HÅKANSSON, KARL
Orientation of elongated particles in shear and extensional flow
IMAYAMA, SHINTARO
Experimental study of the rotating–disk boundary-layer flow
KALPAKL, ATHANASIA
Experimental study of turbulent flows through pipe bends
KLINKENBERG, JOY
Stability analysis of channel flow laden with small particles
ODEMARK, YLVA
Wakes behind wind turbines – Studies on tip vortex evolution and stability
ZHANG, FENG
Eulerian Numerical Study of the Sedimentation of fibre Suspensions
ZHOU, LAILAI
Numerical investigation of swimming Microorganisms in Complex Environments
MEDICAL ENGINEERING

Applied Medical Technology
BUENDIA LOPEZ, RUBEN
Model-based Enhancement of Bioimpedance Spectroscopy Analysis: Towards Textile-enabled applications
ENVIRONMENTAL ENGINEERING

Land and Water Resource Engineering
CARSTENS, CHRISTOFFER
In the Pipe or End of Pipe? Transport and Dispersion of Water-borne Pollutants and Feasibility of Abatement Measures
COELO MIDENCE BALTHASAR, ZAIRIS
Insufficient water supply in an urban area – case study Tegucigalpa, Honduras
ENGSTROM, EMMA
Transport and fate of Escherichia coli in unsaturated porous media
FRANZEN, FRIDA
Creating pathways for stakeholder participation in water management
KALANTARI, ZAHRA
Adaptation of road drainage structures to climate change
LIU, TING
Air-pocket transport in conjunction with bottom-outlet conduits for dams
UUTAM, KEDAR
Linking environmental impact assessment and green procurement in the construction sector: opportunities and perspectives
YANG, JINGJING
Controlling and Monitoring of Deammonification Process in Moving Bed Biofilm Reactor
CIVIL ENGINEERING

Civil and Architectural Engineering
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