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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 the national research foundations.

KTH offers degree courses in architecture, master of science in engineering, bachelor of science in engineering, bachelor’s degree, master’s degrees (one or two years), licentiate or doctoral degrees. KTH also educates subject teachers. There is a technical preparatory course as well as further education. There are a total of 13,300 full year students at first and second levels, over 1,700 active research students and a little more than 4,600 employees.

KTH was founded in 1827 and its current site is at Norra Djurgården in central Stockholm. Other operations are located at AlbaNova close to Roslagstull, where KTH, together with Stockholm University, arranges education and research within biotechnology and physics. 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 addition KTH runs activities at other campuses in the Greater Stockholm area. 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 Haninge. 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.

KTH IN FIGURES 2011

EDUCATIONAL ACTIVITIES

- Master of Architecture and 16 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
- 64 Master programmes (one and two year)
- 3 Bachelor of Science programmes
- Two-year university diplomas, further education, technical preparatory programme
- 13,363 full time students, of which 30 percent are women and 70 percent men (including fee-paying students)
- 11,253 annual performance equivalents (including fee-paying students)
- 1,732 active research students (at least 50 percent activity), of which 29 percent are women and 71 percent men

Admissions

- 2,475 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 29 percent are women and 71 percent men.
- 1,340 new students on one and two-year Master programmes, of which 32 percent are women and 68 percent men.
- 660 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 research level programmes, of which 29 percent are women and 71 percent men.

Examina

- 928 Master of Architecture and Master of Science in Engineering degrees, of which 32 percent were awarded to women and 68 percent to men.
- 250 Bachelor of Science in Engineering degrees, of which 24 percent were awarded to women and 76 percent to men.
- 879 Master (one and two-year) degrees, of which 33 percent were awarded to women and 67 percent to men.
- 235 doctoral degrees, of which 26 percent were awarded to women and 74 percent to men.
- 150 licentiate degrees, of which 31 percent were awarded to women and 69 percent 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)
- Partner in another five areas.
- Lead partner in two programme areas within the European Institute of Innovation and Technology (EIT)
- InnoEnergy
- ICT Labs

FINANCIAL SITUATION

- SEK 3,941 million in total turnover (of which SEK 228 million transfers)
- Government grants (excluding transfers)
- SEK 1,054 million education
- SEK 917 million research/doctoral studies
- External financing (excluding transfers)
- SEK 286 million the Swedish Research Council
- SEK 245 million EU
- SEK 171 million Vinnova
- SEK 117 million Wallenberg Foundations
- SEK 423 million other government agencies
- SEK 499 million other external financing including private funds

EMPLOYEES

- 4,615 employees, the equivalent of 3,375 full time positions, of which 35 percent are women and 45 percent men.
- 295 professors of which 11 percent are women and 89 percent men (including visiting and adjunct professors).
- 228 associate professors of which 21 percent are women and 79 percent men (including assistant professors).

PREMISES

- 238,000 square meters
KTH MANAGEMENT

KTH operations are organised into schools. Each school consists of the departments, centres and educational programmes. Schools report directly to the President and are headed by a Dean and a Vice-Dean. Each school has a Strategic Council that is 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 lecturers 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 with Responsibility 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.

On 1 April 2011 the new faculty organisation entered into force. The Faculty Council bears overall responsibility for issues concerning quality in education, research and collaboration with society. The Faculty Council is also an advisory body to the President.

KTH SCHOOLS WITH OPERATING AREAS

School of Architecture and the Built Environment (ABE)
- Architecture
- Civil and Architectural Engineering
- Real Estate and Construction Management
- Philosophy and History of Technology
- Land and Water Resources Engineering
- Urban Planning and Environment
- Transport Sciences

School of Biotechnology (BIO)
- Industrial & Environmental Biotechnology
- Material Biotechnology
- Molecular Biotechnology
- Protein Technology
- Theoretical Chemistry and Biology

School of Computer Science and Communication (CSC)
- Numerical Analysis
- Theoretical Computer Science
- Media Technology and Graphic Arts
- Human-Computer Interaction
- Speech, Music and Hearing Communication

School of Electrical Engineering (EE)
- Electrical Power Engineering
- Fusion and Space Plasma Physics
- Information and Communications Systems
- Medical Technology and Microsystems

School of Industrial Engineering and Management (ITM)
- Energy Technology
- Industrial Management
- Industrial Production
- Industrial Product Development
- Materials Science and Engineering

School of Information and Communication Technology (ICT)
- Electronic Systems
- Photonics and Optics
- Integrated Devices and Circuits
- Communication: Services and Infrastructure
- Material Physics

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
- Mathematical Statistics
- Mechanics, especially Biomechanics
- Optimisation Theory and Systems Theory
- Fluid Mechanics
- Theoretical Physics
- Applied Physics

School of Education and Communication in Engineering Science (ECE)
- Library Services, Languages and Communication
- Learning
- Media, Publication and Netbased Education
President’s preface

KTH financial statements provide us with a variety of indicators reflecting KTH’s activities from different angles. I think a considerable number of them point to positive development and a strong KTH. But even though it is interesting to study how things were in the past, it is more exciting to look to the future.

In 2011, great efforts have been made to formulate a vision for KTH in a 15–20 year perspective. The project was entitled Vision 2027 to connect with KTH’s 200th anniversary in that year. Our aim was to formulate a vision in several dimensions which will form the basis of guidelines for future strategy plans and decisions. The actual process of developing the vision has also been very valuable in that many people, both in-house and outside KTH, have become involved in matters related to KTH’s future.

The number of applicants to KTH Master of Science in Engineering or Architecture and Bachelor of Science in Engineering programmes continued to increase in 2011. However, I would like to see even more applicants and even greater competition for places. Recruitment efforts therefore remain a top priority. Long term, however, the quality of KTH courses is crucial. As part of quality development in 2011 KTH conducted, for the first time, an external evaluation of its educational programmes. The results of this evaluation have led to the initiation of a series of development projects.

The number of graduates from engineering programmes has, in 2011, once again declined and is now at its lowest level for many years. Graduating more Master and Bachelors of Science in Engineering students will consequently be very much a priority for the next few years, as well as enhancing efforts to improve throughput in all educational programmes.

In 2011, tuition fees were introduced for third-country students. As a result, we see a sharp decline in the numbers admitted, however the decrease was less than feared. The ambition is to eventually return to levels achieved before the introduction of tuition fees.

Generally, however, international students’ interest in KTH is at a very high level. The number of incoming exchange students has grown every year and KTH can no longer accommodate everyone who wants to come. Meanwhile, the number of outgoing KTH students has not kept pace. Extensive efforts have been made to encourage study abroad. It is therefore very gratifying now to see far more outgoing KTH students than before.

In doctoral studies we see an increase in the number of degrees awarded. This is a result of the expansion of research that has taken place over a considerable period of time. I predict this will continue in the years to come.

Research at KTH is expanding. Grants from external funding-providers continues to grow, indicating the university’s strength. However, this may in time cause problems if basic resources do not also increase. The strategic research efforts initiated in the Government Research and Innovation Bill are now beginning to show results in earnest. A number of younger, highly-qualified assistant professors have been brought to KTH and have been given a good start to their careers at the university.

The major strategic investment this year has been the Science for Life Laboratory in collaboration with the Karolinska Institutet, Stockholm University and Uppsala University. Operations in Stockholm are led by KTH. During the year there has been a very rapid build-up of operations and a large number of groups from the Stockholm universities have gathered in one building located next to the Karolinska Institutet.

One sign of KTH excellence is its success in the European Research Council (ERC) calls for applications. There are now 15 researchers at KTH who have received these prestigious grants as younger or senior researchers. This is an excellent result in comparison to most European universities. In 2011, three young researchers received ERC grants.

Collaboration with society is and has always been important to KTH. This is clearly demonstrated in the Vision 2027 work. We see that this field will be developed in different ways in the future. Efforts to enter into strategic cooperation with key partners has begun in earnest. So far, agreements have been concluded with Scania and Stockholm County Council. More agreements will be signed in 2012. The idea is to maintain continuous dialogue on the management of long-term educational and research issues.

Another part of collaboration is the establishment of fundraising operations at KTH. Work is ongoing to formulate a “Case for Support” parallel with dialogue with potential donors. During the year, KTH received a fantastic donation from Kerstin and Rune Jonasson. It is one of the largest donations in KTH’s history and the funds are primarily intended for research in medical technology.

In the continuing saga of developing KTH campuses, KTH has experienced successes. Planning permission has now been granted for the first student housing to be built on the central campus. Work continues on the preparatory processes of even more student housing.

In the KTH Strategic Plan 2009–2012, clear gender objectives are stated; for example that the number of women faculty will increase from 15 percent in 2008 to 20 percent in 2012. This Annual Report provides evidence that the percentage of women faculty has increased since last year. There is hope that the Strategic Plan objective will be
reached. The Strategic Plan also sets a target for the proportion of women among newly admitted students – at least 35 percent. Although there has been a positive development in recent years, it sadly seems that this trend is not moving fast enough.

Financially KTH has produced a strong result. The new investments that have been initiated in recent years are beginning to be clearly reflected in the income statement and balance sheet. KTH is growing and the largest growth was recorded for externally-funded research. I look forward with confidence to developments over the next few years.

Peter Gudmundson
NEW ADMISSIONS TO KTH EDUCATIONAL PROGRAMMES

Admission to the KTH Master and Bachelor of Science in Engineering and Master of Architecture programmes, as well as one and two-year master programmes, bachelor programmes, two-year university diploma programmes, the technical preparatory programmes and further education courses, 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. Also local admissions to the later parts of KTH educational programmes and to the Erasmus Mundus Programme coordinated by KTH are implemented via NyA.

In 2011 a total of 2,522 (2,461) students began in Year 1 of one of KTH’s traditional educational programmes, of which 1,866 (1,814) began on the Master of Architecture and Master of Science in Engineering programmes and 656 (647) on the Bachelor of Science in Engineering programmes. These included one fee-paying student on one of the Master of Science in Engineering programmes. In addition 804 (768) students began their studies on the preparatory technical programmes.

KTH Bachelor degrees saw 149 (153) new students. The two-year university courses in Real Estate and Finance and the similar course in Construction Technology had a total of 107 (104) new students. A total of 1,340 (1,490) new students began master programmes of which 660 had previously been registered in Term 6 of a Master of Science in Engineering programme and 130 (163) 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, 116 were fee-paying and 54 had been granted scholarships.

Alternative selection

In 2011 KTH initiated a pilot study in the use of a maths and physics test to allocate a maximum of one third of the places on the Master of Science in Vehicle Engineering and Engineering Physics programmes. This mathematics and physics test is designed and administered by Chalmers who have used the test as a selection model for admission to certain engineering programmes since 2007. The pilot study was conducted in collaboration with Chalmers.

By using a maths and physics test, KTH has obtained a selection instrument that captures prospective students with a good preconditions to cope with engineering programmes. It is hoped that this will cause programme throughput increase at the same time that it sends a signal that KTH wants prospective students to choose programmes based on their interest in, and knowledge of, mathematics and physics.

Admission of women

Of the new students on Master of Architecture and Master of Science in Engineering programmes in 2011, 32 (28) percent were women, which is an increase on the previous year and the same level as achieved in 2008 and 2009. Of all new students in 2011, 30 (27) percent were women. However distribution between the various KTH programmes varies widely. On certain KTH programmes the proportion of women students has exceeded 40 percent for several years (Master of Architecture, Master of Science in Engineering programmes in biotechnology, design and product realisation plus medical engineering). The same also applies to bachelor level educational programmes in constructional technology and real estate agency. On the Master of Science in Engineering programme in energy and environment which began in 2010, women make up 56 percent of the new students. The share of women in the new student group on the one and two-year master programmes in 2011 amounted to 32 percent. On the bachelor degree programmes there were 40 percent women and 38 percent on the two-year university diploma programmes.

RECRUITMENT OF STUDENTS TO KTH EDUCATIONAL PROGRAMMES

Recruitment goals

The overall goal for recruitment activities is to attract young people in the education offered at KTH.

Target groups are primarily young people at upper secondary schools, adult education students and individuals who have started 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 it 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.

Recruitment activities – national

Recruitment activities have prioritised face-to-face meetings between representatives of KTH and possible future students. KTH runs intensive cooperation programmes with upper secondary schools. These activities are primarily carried out by around 40 student ambassadors. Every year they visit secondary schools, adult education centres and, to a certain extent, the primary schools throughout Sweden. In 2011 the KTH student ambassadors made around 130 school visits and received around 50 study visits at KTH. The student ambassadors also participate in exhibitions and
### TOTAL NUMBER OF NEW STUDENTS AND PROPORTION OF WOMEN IN THIS GROUP 2008–2011

<table>
<thead>
<tr>
<th>Master of Science in Engineering and Master of Architecture, Degree Programme 300 HE credits</th>
<th>2011</th>
<th>2010</th>
<th>2009</th>
<th>2008</th>
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<tr>
<td>Architecture</td>
<td>104</td>
<td>110</td>
<td>113</td>
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<td>Biotechnology</td>
<td>80</td>
<td>81</td>
<td>82</td>
<td>71</td>
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<tr>
<td>Engineering and Education</td>
<td>48</td>
<td>41</td>
<td>41</td>
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<tr>
<td>Computer Science and Engineering</td>
<td>181</td>
<td>192</td>
<td>175</td>
<td>165</td>
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<tr>
<td>Design and Product Realisation</td>
<td>109</td>
<td>109</td>
<td>111</td>
<td>100</td>
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<tr>
<td>Electrical Engineering</td>
<td>61</td>
<td>65</td>
<td>62</td>
<td>50</td>
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<tr>
<td>Energy and Environment</td>
<td>73</td>
<td>53</td>
<td>47</td>
<td></td>
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<tr>
<td>Vehicle Engineering</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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<tr>
<td>Information and Communication Technology</td>
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<td>91</td>
<td>108</td>
<td>65</td>
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<tr>
<td>Chemical Science and Engineering</td>
<td>104</td>
<td>84</td>
<td>112</td>
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<tr>
<td>Mechanical Engineering</td>
<td>152</td>
<td>142</td>
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<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>Microelectronics</td>
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<td>46</td>
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<tr>
<td>Civil Engineering and Urban Management</td>
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<td>152</td>
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<td>Engineering Physics</td>
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<td>Open entrance</td>
<td>123</td>
<td>108</td>
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<tr>
<td>SUB-TOTAL</td>
<td>1,866</td>
<td>1,814</td>
<td>1,872</td>
<td>1,650</td>
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</table>

<table>
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<tr>
<th>Bachelor of Science in Engineering, Degree programme 180 HE credits</th>
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<th>2009</th>
<th>2008</th>
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<tbody>
<tr>
<td>Constructional Engineering and Design</td>
<td>153</td>
<td>168</td>
<td>167</td>
<td>130</td>
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<tr>
<td>Computer Engineering</td>
<td>137</td>
<td>129</td>
<td>160</td>
<td>97</td>
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<tr>
<td>Electronics and Computer Engineering</td>
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<td>Electrical Engineering</td>
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<tr>
<td>Mechanical Engineering</td>
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<td>Medical Engineering</td>
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<td>Engineering and Economics</td>
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<tr>
<td>Engineering and Health</td>
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<td>SUB-TOTAL</td>
<td>656</td>
<td>647</td>
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<th>2008</th>
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<td>Masters programmes 120 HE credits</td>
<td>1,210</td>
<td>1,327</td>
<td>1,374</td>
<td>1,395</td>
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<td>Masters programmes 60 HE credits</td>
<td>130</td>
<td>163</td>
<td>273</td>
<td>222</td>
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<tr>
<td>SUB-TOTAL</td>
<td>1,340</td>
<td>1,490</td>
<td>1,647</td>
<td>1,617</td>
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<th>Bachelors programmes 120 HE credits</th>
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<th>2008</th>
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</thead>
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<td>Business Engineering</td>
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<td>35</td>
<td>45</td>
<td>38</td>
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<tr>
<td>Real Estate and Finance</td>
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<td>68</td>
<td>63</td>
<td>59</td>
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<tr>
<td>Property Development and Agency</td>
<td>45</td>
<td>63</td>
<td>35</td>
<td>27</td>
</tr>
<tr>
<td>Information and Communication Technology</td>
<td>33</td>
<td>37</td>
<td>39</td>
<td>33</td>
</tr>
<tr>
<td>Medical Informatics</td>
<td></td>
<td></td>
<td>19</td>
<td>68</td>
</tr>
<tr>
<td>SUB-TOTAL</td>
<td>149</td>
<td>153</td>
<td>137</td>
<td>156</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TECHNICAL PREPARATORY YEAR, TECHNICAL PREPARATORY SEMESTER</th>
<th>2011</th>
<th>2010</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction management</td>
<td>45</td>
<td>33</td>
<td>39</td>
<td>45</td>
</tr>
<tr>
<td>Constructional Technology and Real Estate Agency</td>
<td>62</td>
<td>68</td>
<td>66</td>
<td>66</td>
</tr>
<tr>
<td>TOTAL</td>
<td>4,922</td>
<td>4,973</td>
<td>5,156</td>
<td>4,622</td>
</tr>
</tbody>
</table>

Source: ladok
trade fairs and other activities, for example guiding visiting parties of school pupils around KTH and providing them with information. They represent most of the KTH programmes and the various campuses. In addition they must reflect the diversity at KTH, primarily as concerns ethnicity and gender. All student ambassadors complete a training course that consists of youth communication, presentation techniques etc.

Recruitment activities – international
In that tuition fees were introduced for students from non-European countries, student recruitment operations at KTH have been allocated a new, broader-based task. Consequently a number of target group surveys were carried out last year by KTH in selected regions in order to obtain background information on which to base international student recruitment marketing. These activities have continued in 2011 and a communications platform for this task has been developed. There is more information about tuition fees for third country students in the chapter entitled Internationalisation.

In order to attract paying students a blog project was started up featuring four master’s students from India, China, Brazil and Thailand. This project that was underway between December 2010 and June 2011 was primarily aimed at ambitious students at technical universities in the KTH priority regions. The aim was to describe the students’ period of study at KTH and life in Stockholm and Sweden.

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 a number of activities jointly with a number of schools. KTH currently cooperates with around 30 upper secondary schools in Stockholm. Upper secondary school students and their teachers gain access in various ways to KTH competence and equipment, 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.

FIRST AND SECOND LEVEL ACADEMIC PERFORMANCE Degrees
In 2011 a total of 928 Masters of Architecture and Masters of Science in Engineering graduated as compared to 1,173 in 2010. In 2011 the number of degrees issued that encompassed 300 higher education credits continued to increase, 235 Master of Science in Engineering degrees were of the new type. The number of Master of Architecture degrees issued in 2011 that encompassed 300 higher education credits were 49 which was the same level as in the previous year.

The KTH objective for the number of Masters of Science in Engineering degrees, as established in each school’s operational instructions, is at least 4,660 for the period 2009–2012. Numbers up to and including 2011 are 2,818 or the equivalent of 60 percent of the objective.

During this year 708 (686) two-year master degrees and 123 (126) one-year master degrees were awarded. In accordance with the older regulations, 43 (74) Master of Science degrees and 5 (12) master’s degrees in broader subjects were awarded this year.

The number of Bachelors degrees continues to increase from the previous year, KTH has awarded 233 (192) such degrees in 2011. This increase is primarily due to the fact that students on Masters of Science in Engineering programmes, and to a certain extent those on Bachelor of Science in Engineering programmes, have applied for and been awarded a Bachelor’s degree.

In addition 250 (258) Bachelors of Science in Engineering have graduated as well as 34 (60) people who were awarded university diplomas.

There were 32 (32) percent women in the graduating group of Masters of Architecture and of Science in Engineering (men 68 (68) percent). Among graduates from one and two-year master programmes there were 33 (32) percent women and 67 (68) percent men. Bachelors of Science in Engineering were 24 (32) percent women and 76 (68) percent men.
FIRST DEGREES 2008–2011

<table>
<thead>
<tr>
<th>Degree of Master of Architecture 270/300 HE credits</th>
<th>2011 Total number of women</th>
<th>2010 Total number of women</th>
<th>2009 Total number of women</th>
<th>2008 Total number of women</th>
</tr>
</thead>
<tbody>
<tr>
<td>Degree of Master of Architecture</td>
<td>78 67%</td>
<td>86 64%</td>
<td>76 55%</td>
<td>83 58%</td>
</tr>
<tr>
<td>Degree of Master of Science in Engineering 270/300 HE credits</td>
<td>850 29%</td>
<td>1,087 29%</td>
<td>881 27%</td>
<td>905 28%</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>43 70%</td>
<td>44 50%</td>
<td>36 64%</td>
<td>43 70%</td>
</tr>
<tr>
<td>Engineering and Education</td>
<td>26 38%</td>
<td>14 43%</td>
<td>10 70%</td>
<td>5 60%</td>
</tr>
<tr>
<td>Computer Science and Engineering</td>
<td>56 13%</td>
<td>72 8%</td>
<td>55 7%</td>
<td>70 11%</td>
</tr>
<tr>
<td>Design and Product Realisation</td>
<td>55 42%</td>
<td>79 47%</td>
<td>46 48%</td>
<td>34 32%</td>
</tr>
<tr>
<td>Electrical Engineering</td>
<td>67 12%</td>
<td>80 16%</td>
<td>81 16%</td>
<td>97 24%</td>
</tr>
<tr>
<td>Vehicle Engineering</td>
<td>64 16%</td>
<td>87 8%</td>
<td>75 11%</td>
<td>63 10%</td>
</tr>
<tr>
<td>Industrial Engineering and Management</td>
<td>76 22%</td>
<td>125 35%</td>
<td>103 31%</td>
<td>99 23%</td>
</tr>
<tr>
<td>Information and Communication Technology</td>
<td>28 13%</td>
<td>26 8%</td>
<td>36 6%</td>
<td>39 8%</td>
</tr>
<tr>
<td>Chemical Science and Engineering/Chemical Engineering</td>
<td>51 67%</td>
<td>82 57%</td>
<td>44 52%</td>
<td>54 54%</td>
</tr>
<tr>
<td>Surveying</td>
<td>5 20%</td>
<td>13 54%</td>
<td>18 44%</td>
<td>24 29%</td>
</tr>
<tr>
<td>Mechanical Engineering</td>
<td>85 20%</td>
<td>144 15%</td>
<td>131 15%</td>
<td>108 18%</td>
</tr>
<tr>
<td>Materials Design and Engineering</td>
<td>19 11%</td>
<td>38 29%</td>
<td>29 31%</td>
<td>16 38%</td>
</tr>
<tr>
<td>Materials Engineering</td>
<td>3 0%</td>
<td>8 13%</td>
<td>8 25%</td>
<td>16 25%</td>
</tr>
<tr>
<td>Media Technology</td>
<td>48 23%</td>
<td>26 35%</td>
<td>18 33%</td>
<td>37 41%</td>
</tr>
<tr>
<td>Microelectronics</td>
<td>11 18%</td>
<td>16 19%</td>
<td>13 8%</td>
<td>10 20%</td>
</tr>
<tr>
<td>Civil Engineering and Urban Management</td>
<td>125 41%</td>
<td>124 47%</td>
<td>88 42%</td>
<td>73 51%</td>
</tr>
<tr>
<td>Engineering Physics</td>
<td>73 15%</td>
<td>89 19%</td>
<td>70 14%</td>
<td>93 23%</td>
</tr>
<tr>
<td>Civil Engineering</td>
<td>13 23%</td>
<td>20 40%</td>
<td>20 45%</td>
<td>24 25%</td>
</tr>
<tr>
<td>not within programme/specialisation</td>
<td>2 100%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of Bachelor of Science in Engineering 180 HE credits</td>
<td>250 24%</td>
<td>258 32%</td>
<td>259 24%</td>
<td>292 25%</td>
</tr>
<tr>
<td>Degree of Master of Science 240 HE credits</td>
<td>43 40%</td>
<td>74 30%</td>
<td>184 24%</td>
<td>425 26%</td>
</tr>
<tr>
<td>Degree of Master of Science 120 HE credits</td>
<td>708 31%</td>
<td>686 32%</td>
<td>495 28%</td>
<td>108 20%</td>
</tr>
<tr>
<td>Degree of Master of Science 60 HE credits</td>
<td>123 40%</td>
<td>126 32%</td>
<td>66 38%</td>
<td>19 58%</td>
</tr>
<tr>
<td>Master Degree 90 HE credits</td>
<td>5 40%</td>
<td>12 33%</td>
<td>31 35%</td>
<td>67 45%</td>
</tr>
<tr>
<td>Degree of Bachelor of Science 180 HE credits</td>
<td>233 40%</td>
<td>192 42%</td>
<td>117 48%</td>
<td>68 66%</td>
</tr>
<tr>
<td>University Diploma 120 HE credits</td>
<td>34 47%</td>
<td>60 68%</td>
<td>53 43%</td>
<td>46 67%</td>
</tr>
</tbody>
</table>

1) Degrees encompass 270 or 300 higher education credits.
Source: Ladok

Performance
In 2011, there were a total of 13,296 state-funded, full-year equivalent students and 11,204 full-year equivalent performances in first and second level education. Of the total number of full-year equivalent students, 90 per cent were studying engineering or natural sciences. Performance rate for KTH programmes at first and second levels was 84(81) percent this year. Performance rate for Master of Science in Engineering and Master of Architecture courses was 87(82) percent, while the rate for Bachelor of Science courses was 85(80) percent. Performance rate for master courses (one year and two years) was the same as last year at 85 percent. Consequently performance rates for architect, master and bachelor of science programmes have increased to a level somewhat higher than 2009 and earlier years. One part of this increase can probably be explained by the fact that KTH moved the examination sessions from the end of one year to the beginning of the next in 2010–2011. This affected the 2010 performance rates negatively while it caused an increase in 2011.

In addition to the state-funded performances, paying students have generated 67 full-year equivalent students and 49 full-year equivalent performances in 2011. Performance rate was 73 percent.
bridging courses between upper secondary school and university
In 2011, KTH also offered 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. These preparatory courses in mathematics were joined by 907 students. There were 74 full-year equivalent students on the maths bridging courses. KTH cooperates with several other universities and university colleges as concerns this mathematics bridging course. Students are registered and graduate from the universities they apply to.

In 2011 KTH also offered bridging courses in other subjects such as physics, programming and datalogical thinking plus chemistry. KTH had a total of 2,537 participants, which was 300 more than last year, and they performed as the equivalent of 202 full year students.

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 2010 or the spring term of 2011, 44 (43 percent or a total of 339 students (29 percent women, 71 percent men) continued on to a KTH Master of Science in Engineering or a Bachelor of Science programme in 2011.

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jects such as physics, programming and datalogical thinking plus chemistry. KTH had a total of 2,537 participants, which was 300 more than last year, and they performed as the equivalent of 202 full year students.

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In 2011, 804 students enrolled on the Technical Preparatory Programme, compared with 768 the previous year.

Women accounted for 28 (30) percent of new students and 72 (70) percent were men. Results for 2011 are 596 full year student equivalents and 422 full year performance equivalents.

Student influence at 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’s Management Group, course committees, the Disciplinary Board, School Councils and Appointments Boards as well as working groups for various studies. Student representatives on the School Councils each have a special responsibility for an educational programme. 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.

KTH and THS cooperate with the aim of continuously developing 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 various sections of the Student Union. This year, special efforts have been made to develop reception activities for international students.

**COOPERATION WITHIN EDUCATIONAL PROGRAMMES**

**Master of Science and Degree in Education**

KTH 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 its own licence. KTH’s application was approved and the programme began in the autumn term of 2011. 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.

Interest in teacher education in physics, chemistry and engineering is very low nationally. KTH’s combination programme has consequently, with its 62 first choice applicants, dominated the field. 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 need for teachers in the relevant subject areas.

In the autumn term of 2011, 48 (41) students began on the programme. The proportion of women among new students in the program is 33 (29 percent). In 2011, 26 students graduated from the programme.

**Technical subjects in education for school teachers**

Cooperation with Stockholm University has been extended so that KTH is now responsible for the technical subjects in Stockholm University’s teacher education programmes. At KTH, the newly-created School of Education and Communication in Engineering Science (ECE) is responsible for these operations. Through recruitment and the incorporation of the House of Science into the new school, KTH has strengthened its expertise in the educational science and technological education fields. KTH has, in agreement with the University of Stockholm, submitted a renewal application for a licence to issue degrees to technology teachers for grades 7–9. If the application is approved, programme start is planned for autumn term 2012.

**The House of Science**

Operations consist of two units, the building at AlbaNova, and Nature’s House in the Bergianska Botanical Garden, and is staffed by doctoral students, students, researchers and teachers, directed by KTH and Stockholm University. The building at AlbaNova includes modern laboratories where laboratory sessions are offered in science and technology. Nature’s House in the Bergianska Botanical Garden offers green biology with tours and excursions outdoors and in greenhouses. The House of Science receives about 30,000 visitors every year, most of whom are school pupils or teachers.
**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. In 2011 students 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 percent of participants gained jobs as engineers after this educational programme.

**DOCTORAL AND RESEARCH STUDIES**

**Objectives**

The objectives of KTH research level programmes are to provide society with qualified, independent researchers who can contribute to sustainable social development.

**Recruitment**

In 2011, all schools with the exception of one have stated that interest in research studies has increased in comparison to previous years. Interest level is unchanged for the one school.

Recruitment to doctoral studies often occurs via contacts between researchers and students in the final year of Master of Science in Engineering educational programmes or in connection with degree projects. It is also becoming more common to recruit doctoral students from the master programmes. Many interested students also contact KTH directly via e-mail. Other routes include the recruitment of research students within the framework of research projects jointly with industry by targeting information at special groups.

In 2011, KTH carried out coordinated advertising of research study positions in the daily newspapers on five different occasions with the aim of making KTH more visible and increasing interest levels in the university as a place for work or study. During the year 133 funded doctoral positions have been advertised which is the same level as in 2010. In addition to funded doctoral positions, 58 (24) study grants have been advertised.

**Admissions**

Doctoral studies at KTH are extremely attractive. Applications for doctoral studies at KTH far exceed resources. In 2011, 350 doctoral students were admitted as compared to 407 in 2010. For those who could not be admitted, lack of funding for studies was given as the reason in almost all cases although a couple of schools also stated lack of supervisors and suitable premises as the reasons why more students could not be admitted. Of the first-year doctoral students, 17 percent were admitted to take a licentiate degree which is considerably lower than in previous years. KTH has made special efforts to ensure that research level students are admitted at the level that is their final goal from the start. Consequently the reduction in the number of licentiate degree students is in line with this policy.

A total of 38 (56) of the new research students, 21 percent women and 79 percent 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) which again is an increase in comparison to last year.

Of those admitted to research level studies in 2011, 45 (41) percent or 155 (105) were KTH graduates. The most common degree was a Master of Science in Engineering. However, the percentage who have a master’s degree continues to increase. Of those holding KTH degrees, 48 (46) percent held a master’s degree and 52 (53) percent a Master of Science in Engineering. In 2,006 the corresponding proportions were 22 and 77 percent.

The proportion of newly-admitted research students with a foreign educational background is at the same level as in 2010. Of the new students in 2011, 38 percent graduated in a country other than Sweden.

In 2011 the proportion of women in this group amounted to 29 percent which is a slight decrease on 2010. The percentage of women in the entire research level student body was also 29 percent, the same as in the previous year.

**Financing of studies**

Of the 1,968 students registered for doctoral studies at KTH in 2011, 1,732 students have been active to at least 50 percent and 1,940 to at least ten percent.

In 2011 funded research places continued to be the dominant form of financing of doctoral studies. By the end of the year approximately 966, or 55 percent of KTH students at research level were using this form of financing, part time or full time. This group consisted of 29 percent women and 71 percent men.

**Doctoral programmes and graduate schools**

The review of KTH doctoral studies that has been underway for several years resulted, in 2010, in a new system of doctoral programmes for education at research level. In
2011 all the new programme structures were implemented and from 1 February 2011, all research level students were admitted to a doctoral programme at KTH.

These are cohesive educational structures including one or several research 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. It 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.

In 2011, the implementation work continued including the establishment of a Programme Council for doctoral programmes. Programme directors have been appointed for each programme. Some new administrative processes for implementing the new programme structure have also been added. There are also activities underway concerning dealing with research level students coming in from the various KTH international cooperation programmes.

At KTH there are currently 14 (14) graduate schools, who collaborate with other universities and/or with industry. A graduate school is defined as a cohesive programme with participation from KTH and partner universities. Graduate schools often have external funding and a pre-defined life span. Graduate schools may also apply interdisciplinary breadth.

### Degrees
In 2011, 235 (201) doctors and 150 (115) licentiates graduated. Of the doctorates awarded in 2011, 26 (33) percent went to women and 74 (67) percent to men and concerning licen-
Figure 8

**LICENTIATES AND DOCTORATES 2008–2011**

<table>
<thead>
<tr>
<th>Licentiate degrees per research field</th>
<th>2011</th>
<th>2010</th>
<th>2009</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total number of women</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>33%</td>
<td>25%</td>
<td>40%</td>
<td>0%</td>
</tr>
<tr>
<td>Physics</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
<td>0%</td>
<td>0%</td>
<td>50%</td>
</tr>
<tr>
<td>Chemistry</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Total</td>
<td>0%</td>
<td>50%</td>
<td>0%</td>
<td>14%</td>
</tr>
<tr>
<td>Information Technology</td>
<td>21</td>
<td>10</td>
<td>9</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>33%</td>
<td>10%</td>
<td>11%</td>
<td>27%</td>
</tr>
<tr>
<td>Engineering Physics</td>
<td>8</td>
<td>11</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>25%</td>
<td>27%</td>
<td>22%</td>
<td>33%</td>
</tr>
<tr>
<td>Electrical Engineering, Electronics and Photonics</td>
<td>11</td>
<td>10</td>
<td>17</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>27%</td>
<td>10%</td>
<td>12%</td>
<td>9%</td>
</tr>
<tr>
<td>Chemical Engineering</td>
<td>17</td>
<td>10</td>
<td>10</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>35%</td>
<td>40%</td>
<td>70%</td>
<td>79%</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>3</td>
<td>2</td>
<td>8</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>33%</td>
<td>0%</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Engineering Mechanics</td>
<td>34</td>
<td>25</td>
<td>32</td>
<td>17</td>
</tr>
<tr>
<td>Total</td>
<td>21%</td>
<td>12%</td>
<td>41%</td>
<td>12%</td>
</tr>
<tr>
<td>Materials Science</td>
<td>11</td>
<td>17</td>
<td>12</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>36%</td>
<td>35%</td>
<td>50%</td>
<td>20%</td>
</tr>
<tr>
<td>Civil Engineering and Architecture</td>
<td>11</td>
<td>3</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>36%</td>
<td>0%</td>
<td>14%</td>
<td>13%</td>
</tr>
<tr>
<td>Engineering and Business Management</td>
<td>21</td>
<td>13</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>33%</td>
<td>23%</td>
<td>38%</td>
<td>25%</td>
</tr>
<tr>
<td>Urban Studies</td>
<td>2</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
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<td>Civil Engineering and Architecture</td>
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<td>Total</td>
<td>40%</td>
<td>50%</td>
<td>14%</td>
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</tr>
<tr>
<td>Engineering and Business Management</td>
<td>33</td>
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<td><strong>2011</strong></td>
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Source: Ladok

At KTH, it is common to graduate as a licentiate as a stage in doctoral studies and a natural review of studies completed. A licentiate degree is a suitable first stage for a doctoral student, but a Licentiate of Engineering degree is also very relevant for employment in industry. Of the doctors graduating in 2011, 52 percent had previously earned a licentiate degree.
Research

KTH research must be “in the service of humanity for the society of tomorrow.” The words are compelling and indicate that research must contribute to technical solutions to some of the biggest challenges human beings are facing in the 21st century. It focuses primarily on energy and climate, water and food, health and aging. The Science for Life laboratory exemplifies the kind of large, multidisciplinary research efforts that will be necessary. In order to live up to expectations, research, education and innovation must be integrated.

For many years KTH has maintained a strong enough position to attract external funding for its research. KTH is a research-intensive university and more than 60 percent of revenues are related to the conduct of research. Of these funds about one-quarter come from international donors or national funding with industrial collaboration.

KTH has been successful in establishing its two environments in the European Institute of Innovation and Technology (EIT): ICT Labs and InnoEnergy and is still successful in bringing home finance from both international and national financiers. This year the KTH Board formulated a goal that funding from EU was to double by 2016.

Globalisation and increased competition mean that more focused efforts must be made and require interdisciplinary approaches. Consequently it is necessary for KTH to support and organise its current and future research environments. The KTH Platform initiative is a significant commitment to developing cross-disciplinary capabilities, managing large-scale calls for applications and further increasing and diversifying the skills of KTH researchers in applying for and obtaining funds. In addition there is continued support to the strategic research areas (SRA) as well as investments in research centres. KTH also intends to intensify contacts with Swedish funding donors, to broaden contact networks internationally and to increase collaboration with Swedish industrial research institutes.

Research platforms

KTH’s research platforms will serve as effective and efficient instruments to deliver multi-disciplinary research – in interaction with various categories of stakeholders – in order to serve the society of tomorrow. The platforms facilitate joint initiatives ranging between KTH schools, along with external stakeholders, linking expertise in new ways and integrating innovation aspects wherever relevant. KTH’s research platforms are focused on the following areas:

- Energy
- ICT
- Material
- Medical and biomedical engineering
- Transport

In 2011, the platforms have focused on development activities. Several research initiatives have been launched where multi-disciplinary formations have been working on writing applications.

The platforms have organised, and contributed to, several workshops to promote multi-disciplinary contacts, with participants from industry, academia, research institutes and society.

Some platforms have been working intensively with infrastructure issues in order to develop strategic partnerships. The platforms are also working with the strategic outlook within their fields in relation to challenges, needs and policy development.

In October, the platforms’ International Scientific Advisory Board met at KTH. Its members, distinguished scholars from Europe, USA and Asia, met with KTH platforms to support their development. Part of the programme was a symposium entitled “The Role of Universities in the New Innovation-Oriented Research Environment”, with participants from the U.S. National Science Foundation, DG Research and Innovation – European Commission and the Ministry of Education and Research among others.

STRATEGIC ACTIVITIES

The strategic development of KTH’s research environments is underway in several areas: the EIT involvement in ICT and energy, support for the strategic research areas (SRA) and by supporting research centres jointly with industrial partners. Last year KTH also started to develop its cooperation with various research institutes and a comprehensive cooperation agreement has been reached with the SP Research Institute.

SRAs

Since 2010, KTH has been receiving part of the government’s investments in strategic research areas. For KTH the research fields of energy, e-science, IT and mobile communication, molecular biosciences, manufacturing and transportation research have been included.

As part of the investment in strategic research areas, 16 new recruitments to academic posts in the Tenure Track programme have been carried out in 2011. The appointments were advertised in December 2010 and January 2011 with enhanced advertising and communication, both nationally and internationally, in order to attract top researchers or those with the potential to become one. Additional efforts were also made to reduce recruitment lead time without affecting quality. Four additional positions were advertised in late autumn and are expected to be filled by mid-2012.
Science for Life Laboratory
In 2011, KTH has 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 a focus on automation, technically advanced data generation and development of expertise in bioinformatics and systems biology. The SciLifeLab has quickly established unique analytical operations which contribute to Sweden’s international research expertise and are used by several universities.

EUROPEAN INSTITUTE OF INNOVATION AND TECHNOLOGY (EIT)
KTH is a leading partner in two of EIT’s three programme areas (KICS); InnoEnergy and ICT Labs. KTH’s involvement within this interdisciplinary EU cooperation has developed well during the year. The EIT has held many discussions this year on the new KICs’ and EIT’s role in the next EU budget period (Horizon 2020 Programme). It is now clear that the Commission’s proposal is that the EIT should receive a significant increase in resources with a focus on consolidation of existing KICs, and a cautious expansion into new areas in 2015 and then a second round 2018.

ICT Labs
In 2011, ICT Labs has established itself as a major European forum for cooperation in innovation and entrepreneurship within the ICT field. Several of Europe’s top universities, research institutes and industries within ICT are members. 2011 was a year marked by the transition from an initial phase to an operational phase with more focus on content rather than structure. The organisation’s operative processes are in place and concrete operations have been launched in a ten or so areas, known as Action Lines, all aimed at integrating the knowledge triangle’s three parts in specific activities. The Electrum in Kista KTH runs the Swedish venue for ICT Labs, Co-Location Center, in an environment where collaboration partners are naturally co-located. The Electrum environment is the basis of activities within the two Action Lines – Media and Content Delivery and Cloud Computing, in which KTH has a high level of technical interest together with SICS and Ericsson. KTH Innovation and STING both operate important parts of the innovation activities of the ICT Labs.

InnoEnergy
InnoEnergy has, in 2011, consolidated its operations in its three areas of education, innovation and business development. Some 40 innovation projects have been started in 2010 and were consolidated in 2011. KTH participates in 24 of these. The Swedish Node leads projects in smart grids and electric energy storage, which currently encompasses five projects. In addition, KTH is responsible for a ‘lighthouse’ project within polygeneration. All projects are in full swing and the situation is the same in the other InnoEnergy nodes.

The rapid startup of InnoEnergy, where the Swedish Node received a startup grant from the Swedish Energy Agency for 2010 and 2011, has made a considerable impression in Brussels. The concept of uniting diverse organisations from the knowledge triangle into a new unit has proven to be successful. InnoEnergy collects together key industries, research institutes and leading universities in the energy sector.

InnoEnergy is the incubator and business developer in the field of sustainable energy that offers scalability and a pan-European field of operations. It is an incubator with six entry points into the different nodes and aims to strengthen the European innovation system.

Centres and other collaboration
There are 40 research centres at KTH. The majority are financed through long-term commitments from, for example, the Energy Agency, Mistra or Vinnova. Funding also comes from the participating industry partners, and in-house from KTH. Active cooperation is underway at these centres with industrial companies and with other stakeholders in society. Four centres have received extended financing and a renewed operational period this year. Some proposals for new research centres are also under discussion.

EXTERNAL FUNDING
National
National funding is one element of the research grants from the Swedish Research Council, the Wallenberg Foundations, the Strategic Research foundations and several other financiers. KTH is the third largest recipient of funds from both the Swedish Research Council and the Wallenberg Foundations. The second part is the national funding of grants for collaboration-oriented research, both for individual projects and for core funding of the KTH centres. In addition there is funding from KTH’s cooperation partners in the public sector and business/industry.

KTH has this year been awarded numerous research grants from Swedish national research financiers. Some examples of the larger grants are given below:

- Jan Linnros, Professor of Solid State Electronics (ICT School), at the head of the group that received SEK 33 million for “Droplet microfluids and functionalised nanowires for detection of circulating tumour cells” from
the Knut and Alice Wallenberg Foundation. The project aims to detect cancer cells circulating in the blood (CTC) in order to identify them by using protein markers as well as DNA/RNA analysis. Approximately 90 percent of all cancer deaths are due to metastases from the original tumour, consequently it is essential to detect hidden tumour cells.

- Björn Palm, Professor of Energy Technology (ITM School), has received funding from the Energy Agency, SEK 36 million over four years, for the resource-efficient cooling and heat pump system, EFFSYS+.
- Hans-Erik Ångstrom, Professor of Internal Combustion Technology (ITM School), has, also from the Energy Agency, received SEK 21 million over three years for a centre of excellence in internal combustion gas exchange, KCGEx.
- Katja Tollmar Grillner, Professor of Architecture (ABE School), has received SEK 25 million over five years from Formas, one of two grants for strong research environments to study “Effects of architecture: thinking about architecture’s social dimension”. The project specifically addresses the problem areas where the interfaces between architecture, society, politics and power become particularly clear. For example, the Swedish “One million programme” architecture and neighbourhoods. Here huge investments will be made in future and there is a large and complex need for knowledge.
- Sonia Buchegger, active at Theoretical Computer Science (CSC School), and Carlota Canalias, in Laser Physics (SCI School) have received SEK ten million each for four years from the Foundation for Strategic Research. They will study the “Protection of personal information for social networks” and “Nano-structured ferroelectric materials”.
- Hans Hertz, Professor of Biomedical Physics (SCI School), has been named Wallenberg Scholar, in order to be able to take research into radiology technology to new heights. The Wallenberg Scholars Programme supports and stimulates some of Sweden’s most successful researchers. Scholars receive five-years’ support, freely disposable, for their research at SEK 3 million annually. His KTH research team is developing a new, pioneering disposable, for their research at SEK 36 million annually.
- Wouter van der Wijngaart, Professor of Microsystems Technology (EES School), is to undertake a four-year project to contribute to RAPP-ID “Development of Rapid Point-of-Care Test Platforms for Infectious Diseases”. The project will develop equipment to rapidly determine if an infection is bacterial and therefore treatable with antibiotics and, if so, based on the patient’s DNA, how the infection is best treated. The grant is approximately SEK 13 million.
- Mamoun Muhammed, Emeritus Professor of Inorganic Materials Chemistry (ICT School), is coordinating the Nextec Project “Next Generation Nano-engineered Thermoelectric Converters – from concept to industrial validation”. Thermoelectric (TE) systems may play a major role in the efficient use and recycling of energy. Material structures that are promising for the next generation of TE modules will be developed for use in environmentally-friendly cooling systems and to recover waste heat from cars. The grant is approximately SEK 11 million.

European research grants

The majority of EU funding consists of grants, primarily from the EU’s Seventh Framework Programme for Research, however KTH has also been active in the EU Framework Programme for Competitiveness and Innovation, the FP. Of all the projects started in 2011, 17 projects received funding of more than SEK 4. The three largest FP7 grants have gone to research teams led by Erwin Laure, Wouter van der Wijngaart and Mamoun Muhammed.

- Professor Erwin Laure, Director of the Parallel Computer Centre (PDC) at the CSC School, is focus point at KTH for several groups within the three-year supercomputer project Cresta “Collaborative Research into Exascale System Software, Tools and Applications”. The intention is for the largest computers in 2020 to be able to deliver an ‘exascale’ (1,018) calculations per second. The grant is approximately SEK 15 million.
- Wouter van der Wijngaart, Professor of Microsystems Technology (EES School), is to undertake a four-year project to contribute to RAPP-ID “Development of Rapid Point-of-Care Test Platforms for Infectious Diseases”. The project will develop equipment to rapidly determine if an infection is bacterial and therefore treatable with antibiotics and, if so, based on the patient’s DNA, how the infection is best treated. The grant is approximately SEK 13 million.
- Mamoun Muhammed, Emeritus Professor of Inorganic Materials Chemistry (ICT School), is coordinating the Nextec Project “Next Generation Nano-engineered Thermoelectric Converters – from concept to industrial validation”. Thermoelectric (TE) systems may play a major role in the efficient use and recycling of energy. Material structures that are promising for the next generation of TE modules will be developed for use in environmentally-friendly cooling systems and to recover waste heat from cars. The grant is approximately SEK 11 million.

This year KTH has strengthened its position in the ERC (European Research Council) with three additional grants. In total, KTH has been awarded 15 ERC grants (both Advanced and Starting). ERC Starting Grants are awarded to young researchers who are considered to be on the leading edge of their fields. Three researchers were awarded Starting Grants this year:

- Frank Niklaus, Associate Professor in Microsystems Technology (EES School), will use his grant of approximately SEK 13 million for his project “New Paradigms for MEMS & NEMS Integration” in order to develop the production of micro and nano electromechanical systems, components (known as MEMS and NEMS). These are essential in many industrial applications as well as for consumer products.
such as air bags in cars and motion controls in mobiles. However, the manufacture of these integrated circuits forms a bottleneck. The ideal for MEMS and NEMS, however, is flexible manufacturing in small batches. The project will test methods to make this possible.

• Danica Kragic Jensfelt, Professor of Computer Science (CSC School), specialising in robot perception, will lead the project FLEXBOT “Flexible object manipulation based on statistical learning and topological representation” in order to develop methods for visual understanding of human hand movements. This will form the basis of the development of control strategies for a robot grasping objects by integrating statistical learning methods with topological representations. The grant is approximately SEK 12 million.

• Jakob Nordström, Assistant Professor of Theoretical Computer Science at the CSC School, will use his Starting Grant of around SEK 5 million on the project UTHOPT “Understanding the Hardness of Theorem Proving” to study which problems can be solved – or not solved – with the help of computers. More specifically, algorithms to prove logic formulas are studied as well as the results that are impossible for this problem.

International research grants

During the year, the number of applications from KTH for research funding outside the EU has increased, although they still represent a limited share of foreign research funding. In particular, applications have been made to the US National Institutes of Health (NIH) within medicine and biotechnology, and DARPA (Defense Advanced Research Projects Agency), primarily in information and communication technology. The Proteome Biology of Cardiovascular Disease Project, led by Mathias Uhlen, Professor of Microbiology (BIO School), has been awarded grants of almost SEK 6 million per year from the NIH for five years.

Some awards and honours during the year

• Anna Finne Wistrand, Associate Professor in Fibre and Polymer Technology (CHE School), has received St. Jude Medical’s research grant of SEK 50,000 to support research into tissue regeneration with the goal of improving the quality of life for patients with a variety of diseases. She received the scholarship for her outstanding research in the development of functional and biodegradable matrices for tissue regeneration.

• Professor Hans Hertz and his research team in applied physics (SCI School) have received the prestigious R & D 100 Award, given annually by the US journal R & D Magazine. The prize has been awarded for work on X-ray generator Liquid Jet Technology from Excillum AB.

• Henrik Hult, Associate Professor of Mathematical Statistics (SCI School) has been awarded the Göran Gustafsson Prize for Young Scientists. The prize consists of a research grant of a total of SEK 1.5 million, over three years. Henrik Hult’s research aims to determine the probability of extreme events in stochastic systems, and to describe how these events are most likely to occur. These techniques are useful for a variety of applications.

• Hans Ringström, Associate Professor of Mathematics (SCI School), was awarded one of the Göran Gustafsson prizes “for his fundamental and internationally acclaimed contribution to the study of dynamics of cosmological models, particularly with respect to the cosmic censorship hypothesis”. In addition to SEK 4.5 million in research grants, he was also awarded a personal prize of SEK 100,000.

HONORARY DOCTORS 2011

• Professor Liam Bannon, Director, Interaction Design Centre, University of Limerick, Ireland has had tremendous influence on the development of the field of Human–Computer Interaction (HCI) especially in Scandinavia. He was one of the founders and editor of the Journal of Collaborative Computing (CSCW). He has also successfully introduced MDI as a research field in developing countries, including India.

• Jean M. J. Fréchet, Henry Rapoport Chair of Organic Chemistry, University of California Berkeley, USA. His research lies at the interface between organic chemistry and polymer chemistry, in the broad area of nanoscience and nanotechnology. He has authored more than 800 scientific papers and holds some 70 U.S. Patents.

• Saskia Sassen, Robert S. Lynd Professor of Sociology at Columbia University, New York, and visiting professor at the London School of Economics and Political Science is a leading researcher in globalisation, immigration and new technology. Professor Sassen is the author of several books in the field and has cooperated with the KTH School of Architecture and the Built Environment since 2004.

• Per Unckel, Stockholm County Governor, Sweden from 2007 to his death in 2011, was deeply involved in a number of strategic research initiatives benefiting Swedish universities and colleges, not least KTH. In recent years, he also contributed to the establishment of the Science for Life Lab (SciLifeLab) and was Chair of the Stockholm Science City Foundation (SSCi) and of Flemingsberg Science. Just days before he died he was informed that KTH had awarded him an honorary doctoral degree which pleased him enormously.
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<th><strong>PROFESSORS 2011</strong></th>
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<tbody>
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<td><strong>NEWLY APPOINTED PROFESSORS (EXTERNALLY RECRUITED)</strong></td>
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<tr>
<td>Building Materials</td>
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<tr>
<td>Building Technology</td>
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<tr>
<td>Chemical Engineering Applied to Thermo Chemical Conversation of Biomass</td>
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<tr>
<td>Information Systems for Power System Management</td>
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<tr>
<td>Information Technology in Construction</td>
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<tr>
<td>Machine Elements</td>
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<tr>
<td>Scalable Mobile Services</td>
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<tr>
<td>Transport Systems Analysis, with special focus on transport policy</td>
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<tr>
<td><strong>PROMOTED TO PROFESSOR</strong></td>
</tr>
<tr>
<td>Analytical Chemistry</td>
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<tr>
<td>Carbohydrate Enzymology</td>
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<tr>
<td>Computational Nanomagnetism</td>
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<tr>
<td>Computer Science</td>
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<tr>
<td>Environmental Impact Analysis</td>
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<tr>
<td>Industrial Economics</td>
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<tr>
<td>Land Improvement and Drainage with emphasis on Ecological Engineering</td>
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<tr>
<td>Machine Design</td>
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<tr>
<td>Mathematical Statistics</td>
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<tr>
<td>Molecular Biotechnology</td>
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<tr>
<td>Nuclear Power Safety</td>
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<td>Polymer Technologies</td>
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<td>Proteomics</td>
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<td><strong>NEWLY APPOINTED VISITING PROFESSORS (EXTERNALLY RECRUITED)</strong></td>
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<tr>
<td>Communication Networks</td>
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<td>E-Learning</td>
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<tr>
<td>Engineering Acoustics</td>
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<tr>
<td>Environmental History</td>
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<td>Ergonomics</td>
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<tr>
<td>Highway and Railway Engineering</td>
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<td>Media Technology</td>
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<td>Nanomaterials Chemistry</td>
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<td>Nuclear Physics</td>
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<td>Optimization and Systems Theory</td>
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<td>The Didactics of Technology, Specialisation Compulsory School and Upper Secondary School</td>
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<tr>
<td>Theory of Solids in Energy Area</td>
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<tr>
<td><strong>NEWLY APPOINTED PART-TIME CONSULTING PROFESSORS</strong></td>
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<tr>
<td>Competetiv Methods in Bridge Design and Construction</td>
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<tr>
<td>Concrete Structures, Specialising in Advanced Concrete Constructions</td>
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<tr>
<td>Energy Technology</td>
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<tr>
<td>Forest-Based Surface Chemistry</td>
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<tr>
<td>Innovation Management</td>
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<tr>
<td>Lightweight Structures with Focus on Manufacturing and Design of Cost-Effective Composite Structures</td>
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<tr>
<td>Lightweight Structures</td>
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<td>Media Technology</td>
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<td>Power electronics</td>
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<td><strong>PROFESSORS WHO HAVE LEFT OR RETIRED</strong></td>
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<td>Computational Physics</td>
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<tr>
<td>Bridge Construction</td>
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<tr>
<td>Construction Materials Technology</td>
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<td>Energy Engineering for the Chemical Processing Industry</td>
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<td>Building Technology</td>
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<td>Graphical Technology</td>
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<td>Industrial Work Science</td>
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<tr>
<td>Industrial Protective Ventilation</td>
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<td>Chemical Engineering with specialisation in Energy Processes</td>
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<td>Circuit Theory</td>
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<td>Quantum Photonics</td>
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<td>Lightweight Structures</td>
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<td>Materials Physics, in particular non-metallic materials</td>
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<td>Environment and Natural Resources Information</td>
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<td>Inorganic Materials Chemistry</td>
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<td>Optimisation and Systems Theory</td>
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<tr>
<td>Regional Planning</td>
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Quality assurance

GENERAL QUALITY ASSURANCE

Quality Policy and Action Plan
In 2011 the new KTH Quality Policy and associated Action Plan was implemented. The Policy, which was developed by the former Faculty Board and adopted by the Board in February, covers the period 2011–2015.

Both documents are based on four areas: education, research, competence management and collaboration with society. Systematic quality assurance will be carried out in all areas, however its emphasis may vary from year to year. In 2011 education was in focus. In 2012, the quality of research efforts will be concentrated on as KTH implements a second Research Assessment Exercise (RAE).

New report series on quality management
In 2011 for the first time, KTH carried out independent quality reporting. The aim is to provide a comprehensive and detailed picture of quality activities and to emphasise the evaluation and follow-up made in order to improve and ensure the quality of KTH’s various activities, centrally and within the different schools. The aim is that the 2011 report will be the first of series produced annually — something that has been requested by the KTH University Board and management.

The 2011 report shows that KTH has increased emphasis on quality issues in connection with increased autonomy for the university. One example is the educational evaluation, EAE, which was completed in 2011. The report also states historical, theoretical and international points of departure that places KTH quality operations into a larger context.

Vision 2027
In 2011, intensive efforts have been made to establish a vision for KTH long-term operations. 2027 was chosen as the target year as it is also the KTH bicentennial year. The vision is to provide a foundation for, and support, decisions to be taken over the next few years mainly those in the Strategic Plan for 2013–2016.

The work of developing the vision has been implemented as an open process and has involved a large number of people inside and outside KTH. The contents have been discussed in various arenas and circulated for comments around the organisation. Discussion seminars have been conducted in various groups: management, faculty, students/docent, government, business, city and region, institutes and organisations. Between May and October KTH employees have been afforded the opportunity to influence and impact KTH’s future. Response has been considerable and the Vision has been revised extensively during its journey.

Vision 2027, which was adopted by the Board in December, discusses the world around the university, KTH’s iden-
policies, and better communication within KTH. The evaluation would also focus on quality control of the fulfillment of the learning objectives stated in both central and local examination procedures. This evaluation would also provide a benchmark and prepare the organisation for the National Agency for Higher Education external review in 2012.

Implementation
The evaluation included, in principle, all KTH educational programmes, a total of around 90 all in all. The evaluation was performed using an internationally proven model consisting of self-assessment, external review and follow-up. The self-evaluation process was conducted at operational level. Self-evaluation included analysis of the programmes’ preconditions, processes and results and was conducted according to a manual. One important part of self-evaluation was to reflect on strengths and weaknesses, threats and opportunities. The schools’ work with self-evaluation reports lasted about four months during the spring of 2011. During the course of the exercise support was offered in the form of guidance materials and seminars.

The external assessors consisted of a total of 50 experts, divided into eight different panels. Apart from subject matter experts in various fields of technology and in pedagogics and evaluation, the assessor groups also consisted of students and other stakeholders. Since the group was international with members from all over Europe and USA, the project was carried out in English. The panel visited KTH for one week in August and then gave their impressions, both verbally and in writing.

Evaluation results
In addition to school and programme-specific results, EAE illuminated some general patterns of relevance to the entire university.

The evaluation showed that students and alumni are largely satisfied with the education they are receiving/received at KTH. One of its strengths is its exceptional scientific foundation which is a result of KTH’s research-intensive activities. However, this could, according to the evaluation, be utilised even more than it is today. Students felt that KTH educational programmes imposed high requirement levels.

The study showed some problem areas concerning work on learning goals. In general, the educational programmes that have been developed according to the intentions of the framework Conceiving-Designing-Implementing-Operating (CDIO) have worked more systematically with the goals than those who have not yet progressed as far with CDIO. One difficulty in this context is the relationship between different learning goals within the same educational programme because KTH has chosen a 3+2 year structure in which the Master of Science in Engineering degree has been retained while at the same time the programmes will also deliver two general degrees – bachelor and master – extensive work on learning and examination goals is necessary.

The evaluation also revealed that the programme level is generally less developed than the course level. At the course level, responsibility is clearly-defined and teachers have an overview of the objectives of the course while students have the opportunity to give feedback in course evaluations etc. At programme level this clarity is often absent and there is evidence of a lack of overall perspective.

For many years KTH, as well as many other technical universities, has experienced problems with throughput of students. EAE confirmed this picture. Students often take more time than the intended study period and some do not graduate at all. This was taken up in EAE as an important quality issue.

Follow-up
EAE will primarily be followed up within the ordinary operations of the various schools who will develop their own action and programme development plans. Monitoring will also take place at the central level with respect to certain common issues, such as targeted efforts to increase throughput, clarification of learning goals and the strengthening of the programme form.

In order to find out if the purposes of the project have been achieved, a meta-evaluation will be implemented. This meta-evaluation will result in advice on strategies for future KTH evaluation activities.

QUESTIONNAIRES
For a number of years KTH has worked systematically with follow-up questionnaires aimed at various categories of students and graduates. Follow-up surveys are vital tools to use to obtain knowledge of how students and alumni experience their education at KTH. Follow-up is to form the basis of any change activities.

Starting Questionnaire
Prior to the 2011 autumn term, a questionnaire survey was carried out among the first-year students on the Masters and Bachelor of Science in Engineering and Master programmes about their backgrounds, how they obtained information about their programmes and why they chose KTH.

The majority of students chose KTH because they felt that the university has a good reputation, the applicants possessed a strong interest in science and technology, they saw considerable career opportunities after graduation and that it would be easy to get a job. Proximity to their home towns was also important.
Doubts about choosing a technical education had been experienced by 39 percent of the new students. The main reasons for this was uncertainty about whether their professional lives on graduation would suit them, the pace of study, difficult mathematics and uncertainty about their interest in technology.

The students have primarily contacted KTH through www.kth.se, www.studera.nu, the KTH Programme Guide, parents and friends and other KTH students. Once they had been admitted the main things they needed help with were study techniques, maths and time and study management.

**Career follow up**

In the spring of 2011 KTH conducted a survey of all KTH graduates in 2008 and 2009. The study showed that an education at KTH does result in employment, relevant job descriptions and relatively high salary levels. In spite of the current turbulent economy, 94 percent of graduates were employed. Graduates who were over 35 and graduates who were born outside Sweden experienced most difficulty in establishing themselves on the labour market. A large proportion of the latter group being international students who left Sweden on graduation and are thus operating on a different labour market.

More than half of graduates already had a job before they took their degree and just over one in four within three months of graduation. Graduates mainly work in consultancy, research and technology-intensive industries and infrastructure services plus in research and teaching. Permanent employment is the dominant form of employment. Only three percent of the total population included in the survey were unemployed jobseekers in the spring of 2011. One in ten who has a degree achieved a managerial position and 45 percent are in charge of others in their work as project managers or supervisors. The survey results strongly suggest that graduates found employment in the areas where they are educated. A large proportion (67 percent) got the job they had hoped for when they graduated. A clear majority of the alumni felt that their education is of great relevance in their daily work and their KTH education fulfils the competence requirements of their current work.

**Quality activities within competence management**

In the area of competence management, quality activities in recent years have focused on the introduction of Tenure Track and related career development support, and on faculty renewal, gender equality and management development more generally. All these operations in 2011 are described in the chapter entitled Staff.

**University teaching qualification**

KTH has retained its requirement for a university teacher training course of 15 higher education credits for teacher recruitment. In 2011, these courses were held in three different areas:

- Initial teacher training for doctoral students
- Higher pedagogical training for teachers
- Training for supervisors in research level programmes
Humankind faces many global challenges that are linked to an increased lack of resources in its broadest sense. Climate change calls for reduced greenhouse gas emissions. Land is becoming a scarce resource necessary to produce food, energy, materials and to preserve biodiversity. Flows of energy, materials, nutrients and chemicals need to be more effective and permit lower levels of loss.

Technical development is essential for sustainable development. It is also the driving force of KTH research and education. Future engineers must be able to develop new products, services and systems that contribute to sustainable development. Technological development alone is not sufficient, technical solutions must be applied so that sustainability potential is fully utilised. Research and education must establish a holistic approach in which use is integrated into a life cycle mindset.

KTH contributes to sustainable development by educating, researching and collaborating with its surrounding community. Almost all education and research at KTH is related to sustainable development. Through its activities, KTH also impacts the environment in practical terms through the consumption of materials and water, energy and chemicals, travel and transport and construction, and indirectly through purchasing and procurement.

In 2011, KTH undertook several new ventures in the field of the environment and sustainable development. The overall aim is for KTH to also be one of the leading technical universities in this field. KTH has chosen to divide its strategic and practical operations into two parts: KTH Sustainability and Sustainable Campus. KTH Sustainability is responsible for teaching, research and collaboration and Sustainable Campus is responsible for in-house environmental management. As part of these efforts, in 2011 a Vice President for Sustainable Development and an Environmental Manager were appointed.

KTH-SUSTAINABILITY

In 2011 the KTH Sustainability Council (KTH-S) was founded in order to work on the environment and sustainable development of KTH’s research, education and collaboration. KTH-S is an advisory body to the President and prepare matters for the Faculty Council. It is headed by Vice President for Sustainable Development and consists of teacher and student representatives, and the KTH Environmental Manager.

Environment and sustainable development are the focus of several programmes, in particular the engineering programme Energy and Environment which started up in 2010 and has attracted many applicants. In addition, several master programmes have the environment and sustainable development as their theme.

All educational programmes must integrate environmental and sustainable development into their range of courses in line with the overall learning goals. In order to promote these activities several initiatives have been taken in 2011 that will continue in 2012. Sustainable development is a priority area for targeted new investments in 2012. Several new courses will be developed in this field and a pedagogical project aimed at the integration of environmental and sustainable development into all programmes will be started up.

KTH research on environment and sustainable development is reinforced by its priority position. KTH is to develop, apply and disseminate technologies, practices, attitudes and skills that promote sustainable development. This in turn requires methods to identify and prioritise what can promote sustainable development. KTH research on environment and sustainable development will have this as its point of departure and be integrated into relevant operations.

One example of KTH breadth in research on environment and sustainable development is the co-financing agreement signed with Carl Bennet AB for the construction of the Environmental Humanities Laboratory at the Division of History of Science and Technology. The first phase covers 2012–2017.

SUSTAINABLE CAMPUS

Successful environmental management requires close cooperation between management, Sustainable Campus, KTH-S and operations. Where possible, activities will be centrally coordinated in both strategic and operational aspects.

In the autumn of 2011, KTH began the process of introducing the environmental management system standard ISO 14001. These activities consist of three parts. The President has taken decisions that:

- The working model for the introduction of environmental management systems at KTH is to be ISO 14001.
- The environmental management system must be ready for certification by 31 December 2014.
- Adequate resources in terms of time, personnel and financial means will be allocated in operations in order to achieve the goal of KTH establishing a certifiable management system according to ISO 14001 by 31 December 2014.

An organisation consisting of an Environmental Manager and Environmental Representatives in each school will be developed. Furthermore, an initial environmental review has been conducted to serve as the basis for the development of key environmental aspects and environmental management routines.
Internationalisation

INTERNATIONALISATION GOALS
In the KTH Strategic Plan for 2009–2012, the overall goal is that KTH is to be an international university and one of Europe’s most eminent technical universities. In addition the following practical goals for internationalisation activities were stated:
- The number of exchange students leaving from KTH is to double, from 338 to 675.
- The number of European students registered on one and two-year master programmes to increase from 250 to at least 450.
- Exchange of teachers with foreign universities to increase.
- KTH graduates to be attractive on the international labour market.
- KTH to further develop cooperation with international elite universities.
- KTH to continue to be a leading partner within European Institute of Innovation and Technology (EIT).

INTERNATIONAL MOBILITY
Student mobility at first and second levels
The most important change that has occurred in exchange agreement operations in 2011 is that further focus has been placed on balancing student exchanges with overseas partner universities, the number of incoming students is significantly higher than the number of outgoing. Increasing the number of outgoing exchange students has long been a priority and is a clearly-stated goal in the KTH Strategic Plan. Consequently it is pleasing that the number of students travelling to foreign universities has increased during the year.

For several years the trend has been that the number of students going abroad to European countries has been considerably lower than the number of incoming students. This can be partly explained by the European partner universities often teaching in a language other than English, and partly by KTH students increasingly seeking out destinations outside Europe, especially English-speaking ones such as Singapore, USA, Australia and Hong Kong. However the results for 2011 indicate that the exchange has become somewhat more balanced.

In 2010, a total of 520 (374) KTH students have begun exchange studies abroad. Of the outgoing exchange students 43 (56) percent studied at a university outside Europe. Much of the increase (65 students) is rooted in the increased interest in exchanges in Europe, supported by the Erasmus Exchange Programme. The number of outgoing Erasmus students to a European country increased 50 percent from 130 to 195 students. Of the graduating Masters of Architecture and Masters of Science in Engineering in 2011, 27 (30) percent were involved in student exchange for at least one term. In total 662 (526) KTH students studied abroad in 2011.

A new form of exchange, Erasmus Mundus Masters Courses (EMMC), was added in 2011 and involved 73 students. This applies to students who are admitted to any of the five Erasmus Mundus masters programmes that KTH coordinates, but who are not currently studying at KTH but at one of the other partner universities within the European networks.

A variety of measures have been taken to increase access to, and interest in, studying abroad among KTH students. The KTH Strategic Plan states that the target for 2009–2012 is 675 outgoing exchange students. The results for 2011 prove that these measures have now borne fruit.

KTH is also investing in providing other forms of foreign experience. A trend in recent years has been that more and more students carry out a project abroad, usually in the form of a degree thesis. Opportunities for obtaining scholarships for this activity have increased. 39 students began at Erasmus Placement at a company or organisation in Europe. 40 students were granted scholarships to do fieldwork in a developing country within the Sida-funded programme, Minor Field Studies.

During the year, 1,535 (1,507) incoming exchange students studied at KTH. As concerns the EEA countries, most students came from universities in France (22 percent), Germany (14 percent) and Spain (9 percent). Of the total number of incoming exchange students 471 (31 percent) were from institutions outside the EU and EEA (third countries). Of these, most students came from universities in Singapore (22 percent), China (15 percent) and Turkey (13 percent). Agreements with Singapore and China are bilateral, while Turkey is part of Erasmus Mundus.

The large number of exchange students who apply to KTH and their evaluations show that incoming students appreciate the education and studies that are offered here. As KTH collaborates with leading universities, exchange students generally achieve very good study results.

Student mobility at research level
The international element of KTH doctoral studies is considerable. More than one third of KTH students at research level has a previous degree from a country other than Sweden.

Of graduates at doctoral level, 13 (12) percent of the licentiate graduates and 15 (24) percent of doctoral graduates spent at least three months of their total study period abroad. Many more, 95 (84) percent of the licentiate and 88 (93) percent of doctors have, during their period of study, participated in research and presented their research findings at international conferences. During the year 62 (70) students at the doctoral level spent at least one month
abroad, while 85 (60) foreign students similarly spent at least a month at KTH.

TUITION FEES FOR THIRD COUNTRY STUDENTS
In 2011, KTH for the first time charged tuition fees for third-country students in accordance with the Ordinance concerning registration fees and tuition fees at higher education institutions (2010:543). There have been some initial difficulties in handling the administrative routines which have now been evaluated and addressed. The fees have affected KTH student administration in the sense that certain management procedures must be tightened and specific tasks centralised in order achieve full functionality.

Tuition fees for third country students are to be determined by the university so that full cost recovery is achieved. The tuition fee for most of KTH programmes and courses is SEK 145,000 per academic year. For programmes and courses at the School of Architecture the fee is SEK 245,000 SEK.

In the autumn of 2011, a total of 316 new fee-paying students arrived. Of these, 191 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. There were 125 full fee-paying students registered, of whom 62 had been awarded scholarships.

Scholarships
The availability of scholarships to reduce or completely fund tuition fees was given priority in 2011. The ability to offer scholarships can be crucial in the recruitment of top students.

KTH was able to offer scholarships in the form of full fee waivers to a total of 65 students. Of these 49 accepted and 48 were registered at KTH after 15 September.

Master’s students at KTH have also been granted scholarships administered by the Swedish Institute. A total of 17 applicants to KTH were offered scholarships by the Swedish Institute, of which 14 accepted and are registered on a Master’s programme.

Overall, at the end of the year, KTH hosted 61 students funded by KTH or Swedish scholarship programmes. In addition to these categories are also students funded by Erasmus Mundus Action 1 and 2 enrolled in KTH Master’s programmes.

Adaptation of student service to fee-paying students
In March 2011, KTH established an International Student Office (ISO) responsible for coordinating issues related to fee-paying students in particular, but also to provide service and information to KTH international students in general. ISO deals with, for example, issues related to reception of new students, student services, general counselling and housing management.

ISO has organised the reception of all international students at KTH through special Arrival Days. On these pre-advertised dates, students were welcomed at the airport and Central Station and then moved up to KTH where they signed housing contracts and received their keys.

The fee-paying students are guaranteed housing for two years and rooms are located on or near the students’ campuses. They have also been offered primary health care as part of KTH Student Health as well as enhanced coverage via the insurance policy FAS + developed by the Administrative Services Agency.

In order to offer fee paying students extra support, a contact person within the university administration was allocated to each student. These have served as a first contact and have helped the student with practical issues. The fee-paying students have also been offered the opportunity of temporary work on campus.

PRIORITY REGIONS
In connection with the fee introduction, KTH determined to prioritise a number of selected regions for targeted investments. The priority areas in 2011 were China, India, Southeast Asia and Brazil. Selected KTH academic employees were allocated a specific region.

The investment in these regions has been extended. The aim is to spread the KTH brand and create opportunities for student exchange and recruitment of master and doctoral students from reputable universities.

During the year visits have been made and new partnerships established in all the priority regions.

COOPERATION WITH UNIVERSITIES ABROAD
In line with the KTH Strategic Plan 2009–2012, collaboration with leading universities around the world has been further developed during the year, particularly in areas that are popular with students studying abroad.

KTH has signed a strategic alliance with the University of Illinois at Urbana-Champaign, USA. Research symposia have been held at both universities with a view to identifying opportunities for cooperation and exchanges at all levels.

A new double degree agreement has been signed with Keio University in Japan.

Further, a new exchange form has been introduced by one of KTH’s main partners, the National University of Singapore, NUS.

CLUSTER
The CLUSTER network consists of twelve eminent technical universities in Europe and is KTH’s single most impor-
tant international network. The network has evolved into a platform and skills base for the development of joint masters programs, including Erasmus Mundus, for applications for funding under EU programmes and as a coherent actor in relations with the EU Commission. A variety of joint activities and projects have been implemented during the year, some of the more important are mentioned below:

- KTH became a partner in the QUESTE project, whose goal is to develop a quality system for technical education.
- KTH is coordinating a project in Lifelong Learning called ATTRACT. The project aims to increase the interest of European young people in science and technology education and has this year entered its final phase.
- A SINO-EU workshop on technical education was held in Lisbon in May. The meeting resulted in an action plan between CLUSTER and the Chinese Ministry of Education stating nine priority issues, including a framework for a double degree, cooperation in the development of a virtual campus for doctoral studies and the establishment of a master programme in China in leading edge fields.
- Work has started on creating joint graduate schools in CLUSTER. The aim is to establish greater cooperation and closer ties at the doctoral level.
- A workshop was held at KTH in January to exchange experience on TEMPUS and the Life Long Learning programme.

Nordic Five Tech
Nordic Five Tech (N5T) was founded in 2006 and is a network among the Nordic region’s five largest universities of technology: Aalto, Chalmers Institute of Technology, the Technical University of Denmark, KTH and the Norwegian University of Science and Technology. The network aims to, through exchanges, increase horizontal mobility between institutions. One area of focus for N5T is joint programmes at second level and in 2011 three new programmes were established resulting in a current portfolio of five programmes. KTH holds the Chair of the N5T Secretariat for the academic year 2011/12.

PARTICIPATION IN INTERNATIONAL PROGRAMMES AND PROJECTS
EIT
KTH is a partner in two of the three consortia for EU cooperation in the European Institute of Technology (EIT) whose task is to make Europe a global leader in innovation. KTH participates in information and communication technology (ICT Labs) and energy (InnoEnergy), consortia that were selected in the face of tough competition. The consor-
tia include research institutes, major engineering companies and many of the leading technical universities in Europe. The projects started in January 2010. See also the Research chapter.

In educational activities related to the EIT, KTH has taken a decision to establish a programme within the framework of ICT Labs and two programmes within InnoEnergy.

**Erasmus Mundus**

In 2011 KTH coordinated the Erasmus Mundus Programmes within Action 1 that were approved in 2009 and 2010, five masters and two doctoral programmes. This year KTH was granted coordinator status for an additional doctoral programme and participates as partners in a new programme that will begin in 2012. Totally, KTH participates in eleven masters and five doctoral programmes. A total of 353 (326) Erasmus Mundus Action 1 students registered at KTH in 2011, including 10 at doctoral level.

KTH coordinates an Erasmus Mundus Action 2 scholarship programme (formerly External Cooperation Window) to promote mobility of students and researchers between twenty technical universities in Europe and Central Asia. In addition KTH participates as a partner in another five new Action 2 projects, one of which is aimed at Georgia, Armenia and Azerbaijan, one at Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan and Turkmenistan, one at Argentina, one at Egypt and Lebanon and one at 14 Asian countries. During the year, KTH hosted a total of 53 scholarship holders in Erasmus Mundus Action 2, with 24 at master level, 22 at doctoral level, one post-doc and five other staff. Most scholars at master and doctoral level arrived in 2010.

KTH is one of the major players in Europe under the Erasmus Mundus program.

**Marie Curie**

KTH participates in ten ITN projects (Initial Training Networks) in the EU Marie Curie Programme, including acting as Coordinator for one of them. Six of the projects were approved in 2011. The projects aim to co-fund doctoral studies positions within a consortium of European universities. The project lasts for four years: the first year is devoted to preparation, call and admission followed by three years of research level education. In order to promote mobility and dissemination of knowledge, students must apply to a different university than where they received their Master’s Degrees. During the year, eight Marie Curie doctoral students were working at KTH.

In 2011, an IRSES project (International Research Staff Exchange Scheme) with KTH as a participant was also approved. The project aims to support joint research projects between research groups in Europe and Latin America.

**Tempus**

Tempus is an EU-funded programme for cooperation between EU countries and a number of countries bordering Europe. The aim of Tempus is to bring partner countries into the process of convergence that is taking place in Europe in higher education as regards the Lisbon Agenda and the Bologna Process. In the longer term the aim is also to facilitate exchanges and cooperation between universities inside and outside EU.

KTH is a major player in the Tempus Programme and was the most successful university as concerns the granting of new projects in 2011. Of the 63 approved projects KTH participated in eight, including two as lead university. KTH is currently involved in 20 Tempus projects.

These projects cover the development of new courses in road construction, energy and sustainable development at second and third levels, entrepreneurship and commercialisation of research, the introduction of quality systems, strategic development and the establishment of laboratories.

**Linnaeus-Palme**

Linnaeus-Palme is an exchange programme targeted at developing countries financed by Sida. KTH participated this year in eight projects, most of which included the exchange of both students and staff. Prior to 2012, KTH has applied for twelve projects.

**The Visby Programme**

KTH coordinates seven international projects in the Swedish Institute Visby Programme. The Visby Programme supports cooperation and exchanges in education between Sweden and the Baltic Sea Region.
In 2011, KTH has intensified its efforts to systematically extend relationships with business/industry and other stakeholders in society. Close, long-term collaboration leads to improved quality of both research and education and, according to the knowledge triangle, collaboration with society is to be an integral part of a university education and research.

Systematic building of strategic alliances has begun, and efforts to increase individual mobility between KTH and industry have been made.

Furthermore a number of activities have been implemented to promote relationships between KTH and the surrounding community. Work was carried out through projects, seminars and meetings of various kinds.

**Strategic cooperation**

In late 2010 the President, based on the goals stated in the Strategic Plan 2009–2012, took a decision to assign a Vice President the mission of creating strategic relationships with KTH’s most important cooperation partners and to increase individual mobility between KTH and the outside world. These activities are carried out in close collaboration with the KTH schools under the name of Faculty for Innovative Engineering – the faculty for adjunct and associated employees at KTH.

The Faculty for Innovative Engineering is to develop dialogue at management level with a dozen major partners about needs and focus in a perspective that is longer than ten years. Structures and agreements will be established which will benefit formalised, targeted collaboration between KTH and its partners. This should be viewed as a supplement to, and a reinforcement of, already established and well-functioning cooperation in research, competence management and skills development. Follow-up of strategic partnerships will take place at annual meetings between the KTH management and current partners. Strategic cooperation agreements with Scania and Stockholm County Council are already in place and dialogues with a number of other companies are ongoing.

**Business Liaison Office**

KTH Business Liaison Office will promote, expand and extend relationships between KTH and the surrounding society.

During the year, a team of three business coordinators were recruited to promote collaboration. They act as pilots for KTH schools, strategic research platforms and companies and organisations. During the year, KTH has conducted a number of activities, including:

- Stockholm Cleantech Business Network, a business network designed to increase the growth and export of environmental technology.

  - Power Stockholm Centre for Life, a three-year project (2009–2012) aimed at developing tools and processes for collaboration and knowledge transfer between academia, healthcare and the life science industry in the region.

  - Knowledge Pilot working to develop effective forms of cooperation between small and medium sized enterprises and academia in the region, mainly within health and the environment.

**COMPETENCE DEVELOPMENT**

**Career development and professional roles**

For several years KTH has provided students with support to help them make a successful entry into the labour market. For example mentoring programmes, career development modules in engineering programmes, seminars on employment and career coaching. Since its inception in 2009, work has been underway to integrate career development into KTH educational programmes. There are a number of programmes that currently work with career development using these methods.

**Commissioned courses and further education**

The KTH collaboration task includes providing education for companies and people already working. KTH offers courses and programmes within a number of different areas aimed at providing a broader or deeper competence for, primarily, active engineers and architects, but also targets other groups, such as teachers, who need competence-enhancement activities.

Long-term activities are underway to build up a range of commissioned courses tailored to the needs of business and industry. In 2011, at the same time, the special initiative on grant-funded further education of professionals was ongoing. A selection of courses were marketed during the year under the title “Add to your career with extra credits.”

**Alumni**

Successful universities are often characterised by their ability to successfully retain students’ commitment after their graduation. KTH alumni operations work to create communities, services and opportunities at each stage of life and act as a link between alumni, students, business/industry and KTH. A variety of opportunities to become involved as an alumnus during the year have been designed and presented.

New challenges, mainly in the internationalisation field, have noted the importance of developing contacts with and between alumni residing outside Sweden. Seven international alumni events have been organised during the year and new Alumni Associations have been launched in the US, Brazil and India.
During the year, the KTH alumni register was further developed and now contains contact details of 49,470 alumni. A further 35,000 alumni are in the KTH archive database. In October, a new online forum for alumni – the KTH Alumni Community – was launched. The number of active users has increased by 23 percent over the year to 15,300.

KTH Alumni are also active in existing online forums especially LinkedIn, where 7,300 KTH alumni are members of the KTH Alumni group. An electronic newsletter is sent out once a month and alumni living in Sweden are sent the KTH & Co magazine four times a year.

INNOVATION SUPPORT AT KTH
KTH Innovation

KTH Innovation works to develop research and business ideas from researchers and students at KTH and move them towards meeting the market.

Since the beginning of the year, KTH Innovation has been running Student Inc (a student incubator) in collaboration with the studentrun entrepreneurial association Exciterra. A total of 16 projects have so far been placed in the student incubator of which ten remained at year end. Projects accepted for Student Inc. have a technology-based, innovative business concept with commercial potential and an expected lead time to market of 1–2 years. Support offered includes coaching by KTH Innovation Business coaches, workshops, commercial support, office space and access to contacts and networks.

Innovation Office

KTH Innovation is responsible for the operations of the Innovation office at KTH – InterAct – based on a partnership between the KTH, Mälardalen University and Stockholm University. Its mission is to use existing operations as a base and, in close cooperation with regional partners, to broaden, extend and streamline innovation support in the Mälar Valley. To this end, in 2011 the competence of the three universities was strengthened through recruitment, experience sharing and joint development projects. In addition, cooperation with innovation offices at Uppsala University and Karolinska Institutet has been extended.
KTH is 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 places people centre stage: human resources and staff development are high priorities. Below is a sample of HR and work-environment activities, conducted in 2011 in accordance with KTH HR Policy.

Employees and managers, participation and influence
In the employee satisfaction survey of 2009 dissatisfaction was revealed concerning development dialogues and salary reviews. Enhancing the quality of these interviews has, in 2011, been one of the President’s priority work environment issues. Using both union and KTH funds seminars on development dialogue and salary reviews have been held targeting managers and employees. These seminars will continue to be provided in regular staff development programmes. In 2012 a similar effort will be made to assure the quality of workplace meetings. In late 2011, a new employee satisfaction survey was addressed to all employees. Its results will be reported in early 2012.

Gender equality, diversity and equal opportunities
In 2011 KTH has worked with the application of a gender equality, diversity and equal opportunities perspective in the recruitment process for teaching appointments. In accordance with the KTH Strategic Plan KTH will, in the recruitment of all categories of staff, develop its processes and increase awareness of gender issues. The application of the Gender Equality Act in the recruitment process starts in accordance with KTH HR Policy. The programme builds up in stages and will be offered to all new employees on the Tenure Track, with the aim of them progressing to associate professor or professor at KTH.

STAFF STRUCTURE
In 2011 the average number of employees increased by 339 to 4,615, as compared with 4,276 in 2010 and 3,900 in 2009. The average number of employees is calculated from measurements taken each month in 2011. When converted into full time equivalent positions this is an increase of 218 to 3,375 in 2011 compared to 3,157 in 2010 and 2,935 in 2009. The proportion of women has increased by one percent from last year to 35 percent. Doctoral students are the group that has increased the most in terms of numbers in 2011 as the university has focused on the recruitment of doctoral students in funded positions.

Teachers and researchers
The number of teachers has increased by 40 full time equivalent positions to 839 (women by 20 to 162 and men by 20 to 677). The group teachers includes professors, visiting professors, adjunct professors, associate professors, associate professors, lecturers and guest lecturers. The increase was in the categories of professor, assistant professor and associate professor (assistant professors accounted for the bulk of the

Competence and career development
KTH’s career development programme linked to the Tenure Track System has been further developed in 2011. The programme clarifies what is required for further qualification to associate professor and professor. KTH offers participants support and development in areas relevant to a broader academic career at KTH. One example of such support is the Partners in Learning (PIL) mentorship programme, others include seminars on topics such as scientific development, educational and management development. The programme builds up in stages and will be offered to all new employees on the Tenure Track, with the aim of them progressing to associate professor or professor at KTH.
increase). The proportion of women teachers is 19 percent, an increase of one percent since 2010.

The number of scientists, research engineers and post-doctoral researchers, that is, staff primarily engaged in research and research-support activities, has increased by 41 full time equivalent positions to 554 (women are unchanged 147 and men increased by 41 to 407). The number of post-docs has increased by 30 full time equivalent positions to 82 (women by 9 to 22 and men by 21 to 60). Postdoctoral positions are temporary for up to two years and were introduced in 2009.

**Professors**

In 2011 the number of full time equivalent positions within the group professor (professor, visiting professor and adjunct professor) increased by 8 full time equivalent positions to 295 (women by 3 to 33 and men by 5 to 262).

Professors have increased by 8 full time equivalent positions to 203 (women by 3 to 24 and men by 5 to 239). The proportion of women has increased by one percent to 9 percent.

Visiting Professors have decreased by one full time equivalent position to 22 (women are unchanged at 8 and men have decreased by 1 to 14). The proportion of female professors has increased by one percent to 36 percent.

The adjunct professor group had, at the end of 2011, increased by 5 to 43 (women by 1 to 6 and men by 4 to 37). In full time equivalent positions this is equivalent to an increase of 1 to 10 (women remain the same 1 and men have increased by 1 to 9). The proportion of women has increased by 1 percent to 14 percent. During the year, nine people were recruited as adjunct professor (1 woman and 8 men), compared with 2010 when 12 were recruited (4 women and 8 men). All adjunct professors are employed by KTH but have their principal employment position located outside KTH. The position is between 20 and 50 percent of a full-time position.

During the year, three people have been appointed as affiliate professors (3 men), while the affiliation of 6 professors has ceased (1 woman and 5 men). Consequently at the end of 2011, KTH enjoyed the services of 26 affiliate professors (2 women and 24 men). The purpose of this category of professor is to strengthen KTH’s international network by linking reputable foreign research colleagues to the university. An affiliation involves no financial commitment from KTH and no employment relationship exists. Affiliated professors are not included in the reporting of employees and of full time equivalent positions in financial statements.

**Associate professors, assistant professors, lecturers and guest lecturers**

The number of associate professors has increased by 21 full time equivalent positions to 228 (women by 8 to 47 and men by 13 to 181). The proportion of women has increased by 2 percent and amounts to 21 percent in 2011.

The number of assistant professors in 2011 decreased by 12 full time equivalent positions to 31 (women by 1 to 8 and men by 11 to 23). The proportion of women in this category has increased by 5 percent and now stands at 26 percent. During the year, two new assistant professors were recruited (1 woman and 1 man). The numbers in this category have been reduced as KTH, in accordance with the Tenure Track career system, are no longer employing assistant professors but instead recruit deputy associate professors as the primary entry point into the career system.

The number of assistant associate professors has increased by 23 full time equivalent positions to 74 (women by 5 to 17 and men by 18 to 57). During the year, 34 assistant associate professors were recruited (9 women and 25 men). The proportion of women remains unchanged at 23 percent compared to 2010.

The number of lecturers has declined by 4 full time equivalent positions to 172 (women increased by 1 to 42 and males decreased by 5 to 130). The proportion of women in this category has fallen by one percent and amounts to 24 percent in 2011.

The number of guest lecturers has increased by 4 full time equivalent positions to 39 (women by 4 to 15 and men unchanged at 24). The proportion of female guest lecturers has increased by 7 percent to 38 percent. Guest lecturer at KTH have temporary contracts and usually work part time.
Doctoral students in funded positions or with grants

Doctoral students in funded positions or with educational grants during 2011 increased by 80 full time equivalent positions to a total of 949 (women by 38 to 282 and men by 42 to 667). Of the 949, 79 students had grants (26 women and 53 men). The percentage of female doctoral students in funded positions or with grants was 30 percent, an increase of 2 percent as compared to 2010.

Technical and administrative staff

The technical and administrative staff, including library staff, increased by 57 full time equivalent positions to a total of 915 (women by 45 to 550 and men by 12 to 365). The proportion of women was 60 percent in 2011. The men are mainly in the category of technical staff and the women in the category of administrative staff.
Premises

SITUATION
At the end of 2011, KTH had at its disposal approximately 238,000 square meters of premises, an increase of 3 percent as compared to the end of the previous year.

Premises are distributed as follows: KTH Campuses including AlbaNova 190,000 square meters, Campus Solna 5,000 square meters, Kista 23,000 square meters and Haninge, Huddinge and Södertälje around 20,000 square meters. The primary landlord is Akademiska Hus that owns all KTH premises on KTH Campus, Solna, Huddinge and Kista. Altogether Akademiska Hus owns approximately 83 percent of KTH property stock.

Several projects concerning premises have been completed in 2011 and new decisions have been taken on several new undertakings. Below are some of the projects that will be implemented within the next few years in order to address space shortages.

• In the spring of 2011 the Science for Life Laboratory, a national resource for large-scale molecular biosciences that KTH, as host university, operates in conjunction with the Karolinska Institutet and Stockholm University, moved into new research facilities of more than 4,000 square meters in Karolinska Institutet Science Park. In the autumn of 2013, an additional 4,000 square meters will be ready for occupancy in the Science Park area.
• Centre for Transport Studies, a joint research project between KTH and the Road and Traffic Research Institute moved, in May 2011, into a completely renovated building in the centre of the campus. Work on an extension has begun in order to address long-term needs for facilities for rapidly-growing transport research operations.
• The Chemistry Block buildings have, in recent years, undergone extensive refurbishment and modernisation. In the autumn of 2011 the rebuilding of the Department of Chemical Engineering was completed.
• The former Red Cross Hospital that Akademiska Hus acquired on behalf of KTH in 2010, is currently undergoing extensive, but sensitive, renovation. In January 2013, the KTH management and most of the university administration will move into modern and efficient office space there.
• Extensive rebuilding and expansion began in the summer of 2011 of the building where several major disciplines within the field of engineering sciences have their premises (including solid mechanics, mechanics and vehicle engineering). The premises will be ready for occupancy in spring 2013.
• In the Civil Engineering Block an extension of the School of Architecture and Urban Planning is in the planning stage. The building is expected to be ready for occupancy in late autumn of 2013.

An overall picture of KTH premises in 2011, and the anticipated development of stocks during the period 2012–2014, are reported to the Strategic Premises Plan adopted by the KTH Board in September 2011.

STUDENT HOUSING
KTH currently provides a large number of student apartments and student rooms for exchange students and foreign Master’s students. In the autumn of 2011 there were approximately 1,100 of these housing units. In 2011 KTH, in collaboration with Akademiska Hus, initiated a housing project on campus, a container/module building of more than 40 apartments. Planning permission for the project was granted in December 2011 and the building is planned to be ready for occupancy at year end.
Finances – outcomes, resource utilisation and financing

FINANCIAL OUTCOME AND CHANGE IN CAPITAL

Net income this year is SEK 108 million, which is an anticipated reduction on last year’s result of SEK 194 million. The expansion of students and performances in 2009 and 2010 has now slowed down. Research funding has increased dramatically and recruitment of additional staff continued in 2011.

KTH’s total turnover of SEK 3,041 million has increased by 7 percent measured as revenue including grants to finance transfers. Depreciation costs show a sharp increase of 26 percent in research and doctoral education. Tangible assets have increased by 31 percent to SEK 363 million in total at KTH.

The closing balance of government agency capital (GAC) in research and doctoral studies is 20 (17) percent of turnover. The inflow of government grants within the strategic research areas (SRA) cannot be allocated to a particular period of time and as these operations are still under construction, costs have not kept pace with revenue.

Overall, GAC forms 15 (14) percent of total assets.

KTH has increased not only GAC but also receivable and unutilised grants during the year. The financial capital and the inflow of grants provides significant opportunities for future strategic initiatives. KTH has, for a number of years, worked intensively with the recruitment of qualified personnel and will continue to do so. KTH also intends to continue to invest in larger-scale investment projects.

Table: Profit/loss

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>3,713</td>
<td>3,480</td>
</tr>
<tr>
<td>Costs</td>
<td>3,604</td>
<td>3,286</td>
</tr>
<tr>
<td>Profit/loss</td>
<td>108</td>
<td>193</td>
</tr>
<tr>
<td>Profit/loss subsidiaries</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Revenues for transfers</td>
<td>228</td>
<td>194</td>
</tr>
<tr>
<td>Grants issued (costs for transfers)</td>
<td>228</td>
<td>194</td>
</tr>
<tr>
<td>PROFIT/LOSS</td>
<td>108</td>
<td>194</td>
</tr>
</tbody>
</table>

Table: Capital Development

<table>
<thead>
<tr>
<th></th>
<th>Balance carried over 2011</th>
<th>Profit/loss 2011</th>
<th>Profit/loss 2010</th>
<th>Balance brought forward 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>First and second level studies</td>
<td>117</td>
<td>7</td>
<td>61</td>
<td>48</td>
</tr>
<tr>
<td>Purchased courses</td>
<td>5</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Commissioned courses</td>
<td>−3</td>
<td>−5</td>
<td>−1</td>
<td>3</td>
</tr>
<tr>
<td>Research and doctoral studies</td>
<td>475</td>
<td>102</td>
<td>130</td>
<td>243</td>
</tr>
<tr>
<td>Commissioned research</td>
<td>9</td>
<td>0</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>TOTAL</td>
<td>603</td>
<td>108</td>
<td>194</td>
<td>301</td>
</tr>
</tbody>
</table>

Table: Revenues

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues for transfers</td>
<td>228</td>
<td>194</td>
</tr>
<tr>
<td>Grants issued (costs for transfers)</td>
<td>228</td>
<td>194</td>
</tr>
<tr>
<td>PROFIT/LOSS</td>
<td>108</td>
<td>194</td>
</tr>
</tbody>
</table>

REVENUES

Revenues increased by 7 percent and are now SEK 3,713 million. This increase consists primarily of income from government grants for research and doctoral studies. Revenues from government grants for research and doctoral studies have increased by 4 percent and funding for first level education has been reduced by the same percentage. Revenue from first level education is 32 percent of total revenue reflecting a decrease of 3 percent since last year.

Education

First level education has reduced its revenues by 4 percent to SEK 1,176 million. Revenues from government grants for first level education has declined by 5 percent to SEK 1,054 million plus SEK 9 million for transfers. KTH has exceeded the specified amount (SEK 1,063 million) by SEK 25 million and has performed to the equivalent of SEK 1,088 million, but has no savings to exploit. The tuition fees for third country students amount to SEK 9 million.

Research and doctoral studies

Research and doctoral studies has increased its revenues by 12 percent to SEK 2,418 million. Revenues from government grants increased by 4 percent to SEK 917 million. The SRA...
projects transferred SEK 61 million of government grants to partners at other universities. If transfers are included, the increase in funding for research and doctoral studies will be 7 percent (SEK 1,000 million). There has been a large increase in applied grants, these have increased by 18 percent to SEK 1,390 million. The largest grants come from the Swedish Research Council, Vinnova, the EU, the Wallenberg Foundations, the National Energy Administration (STEM) and the Foundation for Strategic Research. These financiers account for SEK 956 million or nearly 70 percent of the total amount of grants.

**FINANCES – OUTCOMES, RESOURCE UTILISATION AND FINANCING**

### SOURCES OF INCOME 2011 (2010)

![Source of Income Chart](chart)

**Government grants for education, first and second level:** 28.4% (32%)
**Other private sources/companies:** 15.8% (12.9%)
**EU:** 6.6% (5.2%)
**Strategic foundations:** 2.1% (2.1%)
**Other government agencies:** 15.5% (14.6%)
**Research Council:** 8.9% (8.2%)

**Total:** 3,713 (3,480) mnkr

### COSTS 2011 (2010)

![Costs Chart](chart)

**Government grants for research and doctoral studies:** 24.7% (25.2%)
**Other operating cost:** 17.4% (18.2%)
**Premises:** 16.1% (16.5%)
**Staff:** 61% (60.7%)
**Depreciation:** 5.1% (4.5%)
**Financial cost:** 0.4% (0.1%)

**Total:** 3,604 (3,286) mnkr

### FIELD OF ACTIVITY 2011 (2010)

![Field of Activity Chart](chart)

**Commissioned research:** 2.2% (2.6%)
**Education, first and second level:** 31.7% (35.1%)
**Commissioned education:** 1.0% (0.5%)
**Research and doctoral studies:** 65.1% (61.8%)

**Total:** 3,713 (3,480) mnkr

### COSTS

Operating expenses have increased by almost 10 percent and are now SEK 3,604 million.

Increases are mainly in costs for personnel which account for nearly 65 percent or SEK 226 million of the increase. Operating-, premises-, and depreciation costs account for the remaining part. This indicates the overall expansion fase currently underway. Financial costs rose due to increase in interest rates during the year. KTH has large loans but even so, the increase in financial costs has very little impact on the whole. However, depreciation has increased by SEK 33 million (25 percent).

Staff numbers have increased by 218 FTEs, and the largest increase is in the doctoral student category who account for 37 percent.

Operating expenses have increased by SEK 32 million, which represents 7 percent over the previous year, accounting for 9 percent of increased costs. Purchase of consultancy services and travel costs account for almost the entire increase. Costs for premises have increased by SEK 38 million (7 percent) to SEK 579 million. This amount includes the cost of housing that is secured for foreign students and visiting researchers for SEK 49 million.

Investments have increased by 31 percent since last year. Depreciation costs have increased by 22 percent.
In 2011 KTH began the process of building up fundraising operations. Fundraising as a financing form should be regarded as a complement to other external funding and is part of long-term relationship building with both existing and potential donors and stakeholders.

Central functions for this purpose have been established and a methodology that suits KTH has been developed during the year. Great attention has been paid to developing the in-house administration for the receipt and processing of donations.

The largest donation in 2011 came from Kerstin and Rune Jonasson. This gift is one of the largest private donations in KTH’s history, around SEK 61 million. The funds will contribute to the collaboration between KTH, Karolinska Institutet and Karolinska University Hospital in the field of medical technology, this will mainly be achieved through the acquisition of advanced equipment. The donation will also promote cooperation with South Korea in the research field.

Other donations come from Pulpaper AB and Nils and Hans Backmark’s estate. Pulpaper AB has donated to the School of Chemical Engineering. The funds go to Professor Lars Wågberg at the Division of Fibre Technology and will be used for research on the processing of pulp for the manufacture of regenerated cellulose. Donations from the Nils and Hans Backmark’s estates were allocated by Birgit Backmark for research in microwave technology.

**FOUNDATION MANAGEMENT**

KTH currently manages 114 private foundations with legal requirements for administration by KTH. These foundations have been formed based on various donations to KTH over the course of its history. In 2011, a new foundation was formed – the Per Hagbarth Foundation. This foundation’s purpose is to award grants for innovative, entrepreneurial engineers at KTH. The foundation has assets of SEK 4.1 million.

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 Joh. Michaelson, former member of the Institute’s Board of Directors. Both donations intended to create scholarships for indigent students who have distinguished themselves for hard work, good genes and honorable behaviour. These foundations still distribute scholarships to students at KTH.

**Purpose management**

Each foundation has a purpose stated in its donation documentation. From the foundations, approximately 50, which are intended for students, 302 scholarships totalling SEK 5.5 million were distributed this year. Approximately SEK 3 million came from the largest foundation, Henrik Göransson Sandviken Scholarship Fund, with a capital of SEK 111.5 million. Some 30 foundations award travel grants to teachers, researchers and doctoral students. During the year, decisions were made to distribute SEK 3.9 million from these foundations. Other foundations contribute to a particular branch of research at KTH (SEK 8 million).

The second largest foundation managed by KTH is The Great Prize of the 1944 Donation. The prize 2011 was of SEK 1 million. The donor, who wished to remain anonymous, stipulated that the Prize to be awarded a Swedish citizen who, through ground-breaking discoveries, original applications or artistic achievement, has been of great importance to Sweden. The 2011 Great Prize was awarded Professor Mikael Eriksson, for his courage to think in new paths and realise great visions within accelerator physics. Professor Eriksson has played a key role as constructor of the internationally acclaimed synchrotron light laboratory, MAX-lab, in Lund.

**CAPITAL MANAGEMENT**

The KTH investment policy, which previously was valid for the affiliated foundations, has been updated to include funds that KTH has received through donations and gifts.

Capital is managed by an external discretionary investment manager. This means this manager has the right to carry out transfers within the framework outlined in the Investment Policy. Total foundation assets were SEK 555 million (SEK 636 million in 2010), divided into groups of foundations according to Figure 19.

**Figure 19**

<table>
<thead>
<tr>
<th>Size and Number of Foundations</th>
<th>Total MSEK at end of December 2011</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MSEK</strong></td>
<td><strong>Number</strong></td>
</tr>
<tr>
<td>Foundations up to 1</td>
<td>48</td>
</tr>
<tr>
<td>Foundations, 1–5</td>
<td>40</td>
</tr>
<tr>
<td>Foundations, 5–15</td>
<td>18</td>
</tr>
<tr>
<td>Foundations, 15–161</td>
<td>8</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>114</strong></td>
</tr>
</tbody>
</table>
### Profit and loss statement

**Thousand SEK**

#### Operational revenues

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Government grants</td>
<td>1,970,901</td>
<td>1,992,218</td>
<td>1,779,215</td>
<td>1,665,792</td>
<td>1,572,851</td>
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<tr>
<td>Revenues from charges and other fees</td>
<td>286,027</td>
<td>273,717</td>
<td>277,318</td>
<td>285,141</td>
<td>279,647</td>
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<tr>
<td>Grants</td>
<td>1,431,031</td>
<td>1,205,385</td>
<td>1,129,804</td>
<td>1,008,837</td>
<td>951,738</td>
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<tr>
<td>Financial income</td>
<td>24,563</td>
<td>8,354</td>
<td>9,126</td>
<td>32,503</td>
<td>14,744</td>
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<tr>
<td><strong>Total operational revenues</strong></td>
<td><strong>3,712,522</strong></td>
<td><strong>3,479,674</strong></td>
<td><strong>3,195,464</strong></td>
<td><strong>2,992,273</strong></td>
<td><strong>2,818,980</strong></td>
</tr>
</tbody>
</table>

#### Operational costs

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Staff</td>
<td>2,197,870</td>
<td>1,994,068</td>
<td>1,833,350</td>
<td>1,766,429</td>
<td>1,716,617</td>
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<tr>
<td>Cost for premises</td>
<td>578,538</td>
<td>540,793</td>
<td>544,473</td>
<td>579,594</td>
<td>549,189</td>
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<tr>
<td>Other operating costs</td>
<td>630,460</td>
<td>598,591</td>
<td>483,326</td>
<td>450,619</td>
<td>400,712</td>
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<tr>
<td>Financial costs</td>
<td>15,420</td>
<td>3,733</td>
<td>4,059</td>
<td>15,521</td>
<td>13,599</td>
</tr>
<tr>
<td>Depreciation</td>
<td>182,205</td>
<td>149,028</td>
<td>135,288</td>
<td>124,881</td>
<td>126,952</td>
</tr>
<tr>
<td><strong>Total operational costs</strong></td>
<td><strong>3,604,494</strong></td>
<td><strong>3,286,213</strong></td>
<td><strong>2,998,496</strong></td>
<td><strong>2,937,043</strong></td>
<td><strong>2,807,069</strong></td>
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</table>

#### Operational outcome

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operational outcome</strong></td>
<td><strong>108,029</strong></td>
<td><strong>193,461</strong></td>
<td><strong>196,968</strong></td>
<td><strong>55,229</strong></td>
<td><strong>11,911</strong></td>
</tr>
</tbody>
</table>

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

|                        | –463       | 278        | –515       | 2,429      | 12         |

#### Transfers

<table>
<thead>
<tr>
<th></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>92,368</td>
<td>59,857</td>
<td>20,362</td>
<td>15,917</td>
<td>15,875</td>
</tr>
<tr>
<td>Funds allocated from government agencies for financing of grants</td>
<td>93,573</td>
<td>86,171</td>
<td>94,507</td>
<td>95,787</td>
<td>78,303</td>
</tr>
<tr>
<td>Other funds received for financing of grants</td>
<td>42,354</td>
<td>47,917</td>
<td>45,883</td>
<td>44,541</td>
<td>24,522</td>
</tr>
<tr>
<td>Made contributions</td>
<td>228,296</td>
<td>193,945</td>
<td>160,753</td>
<td>156,245</td>
<td>118,700</td>
</tr>
</tbody>
</table>

#### Outcome of transfers

|                        | 0          | 0          | 0          | 0          | 0          |

#### CHANGES TO CAPITAL

|                        | 107,565    | 193,740    | 196,452    | 57,658     | 11,923     |

#### Undergraduate education

|                        | Total | First and second level studies | Purchased courses | Commissio- | Research/Doctoral studies | Commissio- |
|------------------------|-------|--------------------------------|-------------------|ned courses| and doctoral studies    | ed research |
| **Operational revenues** |       |                                |                   |            |                           |             |
| Government grants      | 1,970,901 | 1,054,108                        | 0                 | 0          | 916,793                  | 0           |
| Revenues from charges and other fees | 286,027 | 76,583                        | 14,097            | 21,528     | 91,012                  | 82,808      |
| Grants                 | 1,431,031 | 40,925                          | 53                | 101        | 1,389,891               | 62          |
| Financial income       | 24,563  | 3,963                          | 0                 | 2          | 20,433                  | 164         |
| **Total operational revenues** | **3,712,522** | **1,175,579** | **14,150** | **21,631** | **2,418,129** | **83,034** |

#### Operational costs

|                        | Total | First and second level studies | Purchased courses | Commisio- | Research/Doctoral studies | Commissio- |
|------------------------|-------|--------------------------------|-------------------|ned courses| and doctoral studies    | ed research |
| Staff                  | 2,197,870 | 688,361                        | 4,322             | 14,191    | 1,442,488               | 48,508      |
| Cost for premises      | 578,538 | 258,086                        | 744               | 1,524     | 305,782                 | 12,399      |
| Other operating costs  | 630,460 | 188,556                        | 6,176             | 10,075    | 407,278                 | 18,374      |
| Financial costs        | 15,420 | 953                            | 13                | 10        | 13,808                  | 635         |
| Depreciation           | 182,205 | 32,395                        | 162               | 333       | 146,368                 | 2,947       |
| **Total operational costs** | **3,604,494** | **1,168,351** | **11,418** | **26,134** | **2,315,734** | **82,857** |

#### Operational outcome

|                        | Total | First and second level studies | Purchased courses | Commissio- | Research/Doctoral studies | Commissio- |
|------------------------|-------|--------------------------------|-------------------|ned courses| and doctoral studies    | ed research |
| **Operational outcome** |       |                                |                   |            |                           |             |
| **Outcome of transfers** |       |                                |                   |            |                           |             |
| **CHANGES TO CAPITAL**  |       |                                |                   |            |                           |             |
## Balance Sheet

Thousand SEK

### Assets

<table>
<thead>
<tr>
<th>Description</th>
<th>2011-12-31</th>
<th>2010-12-31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intangible fixed assets</td>
<td>7,327</td>
<td>10,503</td>
</tr>
<tr>
<td>Development costs brought forward</td>
<td>648</td>
<td>568</td>
</tr>
<tr>
<td>Rights and other intangible assets</td>
<td>6,679</td>
<td>9,935</td>
</tr>
<tr>
<td><strong>Tangible fixed assets</strong></td>
<td><strong>562,750</strong></td>
<td><strong>499,707</strong></td>
</tr>
<tr>
<td>Improvements to non-owned real estate</td>
<td>162,845</td>
<td>159,068</td>
</tr>
<tr>
<td>Machines, inventory items, installations etc</td>
<td>362,985</td>
<td>277,623</td>
</tr>
<tr>
<td>Construction in progress</td>
<td>36,920</td>
<td>58,204</td>
</tr>
<tr>
<td>Advances concerning tangible fixed assets</td>
<td>0</td>
<td>4,811</td>
</tr>
<tr>
<td><strong>Financial assets</strong></td>
<td><strong>18,162</strong></td>
<td><strong>18,536</strong></td>
</tr>
<tr>
<td>Shares in subsidiary companies</td>
<td>18,072</td>
<td>18,536</td>
</tr>
<tr>
<td>Other investments held as fixed assets</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Receivables</strong></td>
<td><strong>112,974</strong></td>
<td><strong>135,569</strong></td>
</tr>
<tr>
<td>Receivables-customers</td>
<td>37,561</td>
<td>46,998</td>
</tr>
<tr>
<td>Receivables – other government agencies</td>
<td>72,448</td>
<td>86,212</td>
</tr>
<tr>
<td>Other receivables</td>
<td>2,965</td>
<td>2,360</td>
</tr>
<tr>
<td><strong>Cut off items</strong></td>
<td><strong>364,403</strong></td>
<td><strong>316,229</strong></td>
</tr>
<tr>
<td>Pre-paid costs</td>
<td>118,239</td>
<td>118,118</td>
</tr>
<tr>
<td>Accrued grant revenues</td>
<td>243,224</td>
<td>189,918</td>
</tr>
<tr>
<td>Other accrued revenues</td>
<td>2,940</td>
<td>8,194</td>
</tr>
<tr>
<td><strong>Settlement with Government</strong></td>
<td><strong>0</strong></td>
<td><strong>0</strong></td>
</tr>
<tr>
<td><strong>Investments</strong></td>
<td><strong>47,349</strong></td>
<td><strong>0</strong></td>
</tr>
<tr>
<td>Securities</td>
<td>47,349</td>
<td>0</td>
</tr>
<tr>
<td><strong>Cash equivalents</strong></td>
<td><strong>1,443,988</strong></td>
<td><strong>1,396,841</strong></td>
</tr>
<tr>
<td>Balance and interest bearing account at Swedish National Debt Office</td>
<td>1,331,886</td>
<td>1,257,516</td>
</tr>
<tr>
<td>Cash</td>
<td>112,103</td>
<td>139,325</td>
</tr>
<tr>
<td><strong>TOTAL ASSETS</strong></td>
<td><strong>2,556,954</strong></td>
<td><strong>2,377,384</strong></td>
</tr>
</tbody>
</table>

### Capital and Liabilities

<table>
<thead>
<tr>
<th>Description</th>
<th>2011-12-31</th>
<th>2010-12-31</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Agency Capital</td>
<td>602,555</td>
<td>494,990</td>
</tr>
<tr>
<td>Government capital</td>
<td>6,850</td>
<td>6,850</td>
</tr>
<tr>
<td>Outcome from shares of/in subsidiary companies and other interests</td>
<td>2,686</td>
<td>2,408</td>
</tr>
<tr>
<td>Changes to capital brought forward</td>
<td>485,454</td>
<td>291,993</td>
</tr>
<tr>
<td>Changes to capital according to profit and loss statement</td>
<td>107,565</td>
<td>193,740</td>
</tr>
<tr>
<td><strong>Provisions</strong></td>
<td><strong>38,685</strong></td>
<td><strong>42,079</strong></td>
</tr>
<tr>
<td>Provisions for pensions and similar commitments</td>
<td>13,171</td>
<td>15,106</td>
</tr>
<tr>
<td>Other provisions</td>
<td>25,514</td>
<td>26,974</td>
</tr>
<tr>
<td><strong>Liabilities etc</strong></td>
<td><strong>736,022</strong></td>
<td><strong>718,283</strong></td>
</tr>
<tr>
<td>Loans from Swedish National Debt Office</td>
<td>372,657</td>
<td>332,719</td>
</tr>
<tr>
<td>Accounts payable – other government agencies</td>
<td>81,149</td>
<td>76,378</td>
</tr>
<tr>
<td>Accounts payable – suppliers</td>
<td>94,711</td>
<td>106,766</td>
</tr>
<tr>
<td>Accounts payable – other</td>
<td>186,253</td>
<td>199,466</td>
</tr>
<tr>
<td>Deposit</td>
<td>1,252</td>
<td>2,954</td>
</tr>
<tr>
<td><strong>Cut-off items</strong></td>
<td><strong>1,179,691</strong></td>
<td><strong>1,122,032</strong></td>
</tr>
<tr>
<td>Accrued costs</td>
<td>84,510</td>
<td>97,501</td>
</tr>
<tr>
<td>Unutilised grants</td>
<td>1,084,146</td>
<td>1,016,886</td>
</tr>
<tr>
<td>Other prepaid revenues</td>
<td>11,036</td>
<td>7,646</td>
</tr>
<tr>
<td><strong>TOTAL CAPITAL AND LIABILITIES</strong></td>
<td><strong>2,556,954</strong></td>
<td><strong>2,377,384</strong></td>
</tr>
</tbody>
</table>

Contingent liabilities:
- Government guarantees for loan and credits: none
- Other contingent liabilities: none
Licenciate Theses

Licentiate degrees awarded during 2011

**BIOTECHNOLOGY**

**Biotechnology**
Chen, Xing
Theoretical Studies on Molecular Magnetic Properties

Engelmark Cassimjee, Karim
Tools in Biocatalysis – Enzyme Immobilisation on Silica and Synthesis of Enantioselective Amines

Ying, Fuming
Application and development of quantum chemical methods. Density functional theory and valence bond theory

**ELECTRICAL ENGINEERING, ELECTRONICS AND PHOTONICS**

Electronic and Computer Systems
Payberah, Amir
Distributed Optimization of P2P Media Delivery Overlays

Rasch, Katharina
Plug and play context-awareness for pervasive environments

Roverso, Roberto
Design and Implementation of Centrally-Coordinated Peer-to-Peer Live-streaming

Wang, Peng
Architecture and Circuit Analysis for UWB front-end with Antenna

Electrical Systems
Antonopoulos, Antonios
Control, Modulation and Implementation of Modular Multi-level Converters

Jia, Kelin
Electromagnetic Noise Generated in the Electrified Railway Propulsion System

Jäverberg, Nadejda
Dielectric properties of poly (ethylene-co-butyl acrylate) filled with Alumina nanoparticles

Skoglund, Mattias
Evaluation of Test Cycles for Freight Locomotives

Zhao, Shuang
Modelling and Control of a PMsynRel Drive for a Plug-in Hybrid Electric Vehicle

Microelectronics and Applied Physics
Fang, Yeyu
Tilted and graded anisotropy FePt and FePtCu thin films for the application of hard disk drives and spin torque oscillators

Xu, Tianhua
Digital Dispersion Equalization and Carrier Phase Estimation in 122-Gbit/s Coherent Optical Fiber Transmission System

**PHYSICS**

Biological Physics
Schwaiger, Christine
Dynamics of the voltage-sensor domain in voltage-gated ion channels

**ENGINEERING AND BUSINESS MANAGEMENT**

Philosophy
Johansson, Linda
Robots and Moral Agency

Production Engineering
Abdulrah Asif, Farazee Mohammad
Resource Conservative Manufacturing. A New Generation of Manufacturing

Akillioglu, Hakan
Evaluative Production Systems: Demand-Responsive Planning

Ekberg, Peter L
Ultra precision metrology – the key for mask lithography and manufacturing of high definition displays

Lindqvist, Richard
Geometrical and dimensional Measurement Planning – a systematic and holistic approach

Infrastructure and Planning
Alverbro, Karin
Environmental and Ethical Aspects on Destruction of Ammunition

Borg, Lena
Incentives and choice of construction technique

Högberg, Lovisa
Incentives for energy efficiency measures in post-war multi-family dwellings

Jia, Tao
Exploring Massive Volunteered Geographic Information for Geographic Knowledge Discovery

Kopsch, Fredrik
Including International Aviation in the EU Emissions Trading Scheme

Lin, Xing
Modern GIN Systems: Framework, Retrieval Model and Indexing Techniques

Niu, Xin
Multitemporal Spaceborne Polarnetric SAR Data for Urban Land Cover Mapping

Sarraf, Mohammad
Verges of Urban Spirit – Isfahan’s Urban Fabric through Socio-Spatial Transformations

Tikoudis, Ioannis
Essays on regional labor markets: interactions with land and transport

Wallhagen, Marita
Environmental Assessment of the Buildings and influence on architectural design

Zalejska Jonsson, Agnieszka
Low-energy residential buildings: Evaluation from investor and tenant perspectives

Zhao, Yueming
GPS/IMU integrated system for land vehicle navigation based on MEMS

Ägerstrand, Marlene
Improving the transparency and predictability of environmental risk assessments of pharmaceuticals

Transport Science
Gullberg, David
Implementation and Evaluation of an HMA Fracture Mechanics Based Design Module

Laurell Lyne, Åsa
Minerals and their Dispersive Interaction with Bitumen

Westin, Jonas
Welfare Effects of Transport Policies

**INFORMATION TECHNOLOGY**

Computer and Information Science
Flores Delgadillo, Will Johnny
IT Service Delivery in Nicaraguan Internet Service Providers: Analysis and Assessment

Lopez Poveda, Anayanci
Towards a Framework for Analyzing IT Strategy Management in Public Sector

Computer Science
Ni, Fei
Learning-based Software Testing using Symbolic Constraint Solving Methods

Sindhu, Muddassar Azam
Incremental learning and testing of Reactive Systems

Communication Systems
Cakici, Cemil Baki
Disease surveillance systems

Gonzalez Sanchez, Dina Pamela
Resource Sharing and Network Deployment Games

Tercero Vargas, Miurel Isabel
Topics in Dynamic Spectrum Access

Human-computer Interaction
Tobiasson, Helena
There’s More to Movement than Meets the Eye – Perspectives on Physical Interaction

Automatic Control
Alam, Assad
Fuel-Efficient Distributed Control for Heavy Duty Vehicle Platooning

Larsson, Christian
Toward Applications Oriented Optimal Input Design With Focus On Model Predictive Control

Ramesh, Chithrupa
Contention-based Multiple Access Architectures for Networked Control Systems

Silva Oliveira Araujo, José
Design and Implementation of Resource-Aware Wireless Networked Control Systems
Signal Processing
Zachariah, Dave
Fusing Visual and Inertial Information

Telecommunication
Andersson, Mattias
Coding for the Wireless Channel

Blasco Serrano, Ricardo
Coding Strategies for Compress-and-Forward Relaying

Chatzidrosos, Ilias
P2P Live Video Streaming

Di Marco, Piergiuseppe
Modeling and Design of Multi-hop Energy Efficient Wireless Networks for Control Applications

Lu, Lu
Wireless Broadcasting with Network Coding

Sathyaveer, Prasad
Studies of Three Different Methods to Estimate the Up-link Performance of Mobile Phone Antennas

Schrammar, Nicolas
On Deterministic Models for Wireless Networks

SI, Zhongwei
On Distributed Coding for Relay Channels

CHEMISTRY

Chemistry
Wiberg, Henning
Analytical Approaches to Neurodegenerative Disease Protein Aggregation

Chemical Engineering
Göring, Martin
Turbo-machinery in Biofuel Production

Hu, Yukun
CO2 capture from oxy-fuel combustion power plants

Naqvi, Raza
Bio-refinery System integrated with the Pulp and Paper Mills using Black Liquor Gasification

Picado Rivera, Apolinar
An Analytical Solution Applied to Heat and Mass Transfer in a Vibrated Fluidized Bed Dryer

Rodriguez Gomez, Rasi
Upflow anaerobic sludge blanket reactor Modelling

Svens, Pontus
Development of a Novel Method for Lithium-Ion Battery Testing on Heavy-Duty Vehicles

Yang, Huaiyu
Investigations into the crystallization of butyl paraben

Polymer Technology
Alin, Jonas
Microwave heating effects on degradation and migration of additives from polypropylene packaging

Atari Jabzarzadeh, Sevill
Biofilm adhesion on silicone materials

Castanho Claudino, Mauro
Thiol-ene Coupling of Renewable Monomers: at the forefront of bio-based polymeric materials

Khosravi Hazargaribi, Sara
Protein-Based Adhesives for Particleboards

Nordell, Patricia
Aluminium Oxide – Poly (ethylene-co-Butyl Acrylate) Nanocomposites: Synthesis, Structure, Transport Properties and Long-Term Performance

Ragnell Andersson, Sofia
Tuning the Poly(lactide) Hydrolysis Rate Without Introducing New Migrants

Salehi Movahed, Alireeze
Effect of Wood Constituents Oxidation of Unsaturated Fatty Acids

Yin, Bo
Core-Shell Nanoparticle and Renewable Resource Plasticizers for PVC

Yu, Wenbin
Degradation of Polyethylene Pipes Distributing Chlorinated Water Depletion of Stabilizers, Release of Degraded Products and Polymer Degradation

Zhu Ryberg, Yingzhi
Wood Hydrolysis rate for Renewable Products

MATHEMATICS

Mathematics
Parra Castaneda, Rodrigo
Leroy numbers on projective varieties

Numerical Analysis
Jansson, Niclas
High performance adaptive finite element methods for turbulent fluid flow

Marin, Oana
Quadrature rules for boundary integral methods applied to Stokes flow

CIVIL ENGINEERING AND ARCHITECTURE

Architecture
Legeby, Ann
Urban segregation and urban form: From residential segregation to segregation in public space

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Spatial positioning: Method development for spatial analysis of interaction in buildings

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Abdi, Adel
Technical and Contractual Aspects in Winter Highway and Railway Operation and Maintenance

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Study and application of modern bridge monitoring techniques

Hansson, Håkan
Warhead penetration in concrete protective structures

Leander, John
Improving a bridge fatigue life prediction by monitoring

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Some Aspects of Foamed Bitumen Technology

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URBAN STUDIES

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Lanner, Daniel
Investigation of the boundary conditions for oblique testing of Motorcycle helmets using numerical methods – with focus on the human neck and shoulder

Nilsson, Mats
On the Introduction of a Grip Strengthening Glove for Rehabilitating and Assistive Technology

ENGINEERING PHYSICS

Physics
Skoglund Lindberg, Peter
Electron-Impact Liquid-Jet Water-Window X-ray Sources

Xu, Zhen Xiang
Analysis of the unbound spectrum of 12Li and 13Li

Zhang, Youpeng
Transmutation of Americium in Fast Neutron Facilities

Physical Electrotechnology
Ivanova, Darya
Fuel Retention and Fuel Removal from First Wall Components in Tokamaks

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High Power Microwave Sources: Design and Experiments

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Cluster Multi-Point Observations of the Auroral Acceleration Region

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Predictions of Effective Models in Neutrino Physics

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Aspects of extra dimensions and membranes
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**BIOTECHNOLOGY**

Biotechnology

Bäcklund, Emma
Impact of glucose uptake rate on recombinant protein production in Escherichia coli

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Plant and microbial xylanoglucanases: Function, Structure and Phylogeny

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Den anbefalade gommen: vinsprovarens dubbla grepp, från analys till upplevelse

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The Black-Litterman Model: Towards its use in practice

Skoglund, Annika
Homa Clima – Klimatmänniskan och den produktiva makten – [tyrning genom klimatförändring som bioetiskt insamling]

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Ledarskap,makt och känsla. En narrativ studie av unga ledare

Production Engineering

Archenti, Andreas
A Computational Framework for Control of Machining System Capability: From Formulation to Implementation

Berglund, Anders
Criteria for Machinability Evaluation of Compacted Graphite Iron Materials

Rogstrand, Victoria
Information Representation of Production Requirements

Infrastructure and Planning

Adolfsson, Marcus
On analysing changes in urban structure – Some theoretical and methodological issues

Bagherbandi, Mohammad
An Isotopic Earth Crustal Model and its Applications

Jenelius, Erik
Large-Scale Road Network Vulnerability Analysis

Li, Yuheng
Urban-rural relations in China: A study of the Beijing-Tianjin-Hebei Metropolitan Region

Lindberg, Anna-Karin
Learning from accidents: Experience feedback in practice

Lindqvist, Sylvia
Transaction cost and transparency on the owner-occupied housing market: An international comparison

Mushumbusi, Medard Zephyrin
Formal and Informal Practices for Affordable Urban housing – Case Study Dar-es-Salaam

Netzel, Olof
Essays on lease and property valuation

Petersen, Tom
Production econometrics and transport demand modelling in Southern and Northern Sweden

Schenk, Linda
Setting Occupational Exposure Limits. Practices and outcomes of toxicological risk assessment

Svenfelt, Åsa
Two strategies for dealing with uncertainty in social-ecological systems

Van Well, Lisa
Institutional Capacity for Territorial Cohesion

Weingaertner Kohlscheen, Carina
Identifying Strategic Initiatives to Promote Urban Sustainability

Planning and Decision Analysis

Fredriksson, Charlotta
Planning in the “New Reality” – Strategic Elements and Approaches in Swedish Municipalities

Gunneransson Östling, Ulrika
Just Sustainable Futures: Gender and Environmental Justice Considerations in Planning

Transport Science

Kristofersson, Ida
Congestion charging in urban networks: Modelling issues and simulated effects

Moran Toledo, Carlos
Relevance & Reliability of Area-Wide Congestion Performance Measures in Road Networks

**INFORMATION TECHNOLOGY**

Computer and Information Science

Mwakalinga, G Jeffy

Computer Science

Fagerström, Daniel
Spatio-Temporal Scale-Space Theory

Harischandra, Nalin
Computer Simulation of the Neural Control of Locomotion in the Cat and the Salamander

Kreitz, Gunnar
Aspects of Secure and Efficient Streaming and Collaboration

Pronobis, Andrzej
Semantic Mapping with Mobile Robots

Electrical Measurements

Carlberg, Fredrik
Development of materials, surfaces and manufacturing methods for microfluidic applications

Communication Systems

Abbasi, Abdul Ghafoor
CryptoNET: Generic Security Framework for Cloud Computing Environments

Markendahl, Jan I
Mobile Networks Operators and Cooperation – A Tele-Economic Study of Infrastructure Sharing and Mobile Payment Services

Nungu, Amos Muhunda
Towards Sustainable Broadband Communication in Under-served Areas: A Case Study from Tanzania

Media Technology and Graphic Arts

Reti, Tommo
Digital Content Networks: The Past, the Present, and Decentralizing

Automatic Control

Sahlholm, Per
Distributed Road Grade Estimation for Heavy Duty Vehicles

Telecommunication

Björnsson, Emil
Multiantenna Cellular Communications: Channel Estimation, Feedback, and Resource Allocation
Gunnar, Anders
Aspects of Proactive Traffic Engineering in IP Networks

Helgason, Olafur
Opportunistic Content Distribution

Kozica, Ermin
Paradigms for Real-Time Video Communication and for Video Distribution

Kron, Johannes
Low-delay sensing and transmission

Li, Minyue
Distribution Preserving Quantization

Lungaro, Pietro
Context-based Resource Management and Architectures for Future Wide and Local Area Wireless Networks

Ma, Zhanyu
Non-Gaussian Statistical Models and Their Applications

Nasiri Khormuji, Majid
Coding Schemes for Relay Networks

Park, Pan Gun

Stabellini, Luca
Towards Reliable Wireless Sensor Networks

Wuhib, Fetahi Zebenigus
Distributed Monitoring and Resource Management for Large Cloud Environments

Yao, Sha
Relaying without Decoding

CHEMISTRY

Chemistry
Bergenudd, Helena
Understanding the Mechanisms Behind Atom Transfer Radical Polymerization – Exploring the Limit of Control

Danielsson, Marie
Chemical Defence in Norway Spruce

Deng, Lingguan
Photochemical Surface Functionalization: Synthesis, Nanotechnology and Glycobiological Studies

Duan, Lele
Artificial Water Splitting. Ruthenium Complexes for Water Oxidation

Frisé, Anton
Nano-Segregated Soft Materials Observed by NMR Spectroscopy

Hartmann, Michael
Microfluidic Methods for Protein Microarrays

Holmboe, Michael
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