

LTH 04.



Contents

Gunilla Jönson, Dean	4
Undergraduate Studies	6
Student Intake	7
Recruitment	8
International Collaboration	9
Postgraduate Studies	11
Contacts with Industry	13
LTH in the Media	14
Staff	15
Honorary Doctors	16
Grants and Prizes	17
Finance	19
The Board	27
Key Facts and Figures	28

Competition Affects LTH



The Faculty of Engineering LTH is one of the three complete faculties of technology in Sweden providing education in all the 'classic' disciplines of engineering and technology at M.Sc. level, as well as running degree courses in Architecture and Industrialised building. One feature that all three institutes share is that they have a strong research identity as the foundation of their ability to offer the highest quality of education. During 2004 it became clearer than ever that we are now operating on a global education market characterised by tough competition; and the constantly changing levels of interest in different areas of technology require us to be on our toes, ever ready to adapt LTH's course programmes. For instance, in 2004 fewer students applied for places on our BSc in Engineering programmes; these programmes are expensive to run; and as a result of this combination

of circumstances we decided to close down the programmes in Production Engineering, Multimedia Engineering and Chemical Engineering at Campus Helsingborg, and to move the vocational course in Food Technology to Lund. At the same time, the programmes in Construction Engineering and Computer Science & Technology in Helsingborg were expanded.

We have increased our collaboration with the university institutes in Malmö and Kristianstad, as a means of co-ordinating our resources and ensuring that we provide education that corresponds to the needs of society and industry. For example, as a consequence of low levels of interest from prospective students, there is no longer any intake for three-year BSc courses in Chemical Engineering in Malmö, Kristianstad or Helsingborg. Interest in courses in the fields of Physics and Mathematics, on the other hand, showed an increase during the year, while Mechanical Engineering and Civil Engineering remained at a constant level. LTH's size naturally means that we are able to respond rapidly to changes in demand for education, and at the same time the inter-university co-ordination and co-operation that has now been developed means that each institute is better equipped to recruit new students from its respective local catchment area. It can be added that side-by-side with the changes in the academic interests of Swedish students, there are increasing numbers of foreign students wishing to study in Lund. This in turn means that there is a greater need for courses that are taught in English.

LTH continued to support the methodological development of the education it provides, and contributed to stimulating didactic research, for example by arranging a research conference in this area. However, we declared a 'semi-moratorium' in the award to lecturing staff of the 'Excellence in Teaching Practice' (ETP) diploma, pending an evaluation of the scheme and the formulation of means of using it to develop pedagogical competence still further.

LTH's research strategy is based on our having many fields where we are strong; this is partly in order to guarantee quality in our undergraduate courses, and partly to enable us to meet society's needs for PhD graduates in a broad spectrum of disciplines. In our assessment, having a broad research base is a prerequisite if we are to be able to provide both undergraduate and postgraduate studies of the highest standard. Our diversity is our strength – a pyramid cannot have an apex without a base! During 2004 we had a lot of contact with different research financers who have called for and planned new approaches to the financing of research. This creates opportunities for generating new research grants for research teams – although it also leads to an increased risk that established areas of work may lose their financial support for greater or lesser periods of time. During the year LTH drew up a distribution model for the faculty appropriation; this involves a combination of base funding, strategic investments, and co-financing of new strategic initiatives by various research foundations.

It is a significant advantage for LTH to be part of Lund University; it is easier for us than for completely independent institutes to build up collaboration across faculty boundaries. There is a demand today for research in the fields of technology, medicine and the sciences which is also rooted in the humanities and social sciences. Being a faculty of Lund University means that we are in an excellent position to carry on this kind of inter-disciplinary research.

Our new organisation also presents us with opportunities for rationalisation within our departments – with regard to administration and management, and in terms of co-ordinating support functions at different levels. In addition, it means we are better able to carry out necessary restructuring and adaptation at both department and section level.

The need for a great degree of flexibility can be clearly understood when one looks at the figures for LTH's various sources of income in 2004: 29 % stemmed from allocations for undergraduate education, 18 % consisted of the faculty appropriation, 39 % came from research grants, 13 % from research commissions, and 1 % was financial income. In other words, our research and commissioned work is financed to the tune of roughly 75 % by external funding; and roughly 52 % of all our funding comes from external sources.

In its work of providing undergraduate education and carrying out research, LTH makes sure that it is not an ivory tower, but in fact actively interacts with society. This interaction is important for LTH's development and future competitiveness, which is why in 2004 we established a programme for increasing our contacts with LTH alumni.

We are thoroughly convinced that with its openness and diversity, LTH is ready to meet the challenges of the future.

Gunilla Jönson, Dean

FUNCfood

Investment in research on health-promoting foods

An investment of SEK 40 m (approx. 4.4 m) is to be made in a new inter-disciplinary PhD programme at Lund University; this programme will combine input from different scientific disciplines in order to develop new functional-food products (functional foods are products which in addition to their usual nutritional value also have a documented beneficial effect on health). The new PhD programme, called FUNCFOOD, is a collaborative venture in which Lund University works together with the Innovationer i Gränsland organisation, the Skåne regional authority, the Sparbankstiftelsen Skåne foundation, and various food manufacturers.

The new programme will primarily concentrate on research on foods which have beneficial effects on intestinal health and metabolic syndrome. The field of intestinal health embraces illnesses such as inflammatory intestinal disorders and cancer, and metabolic syndrome includes diseases such as diabetes, cardiovascular disorders and obesity. Lund University has already established itself as a centre for research into these diseases of civilisation.

”We are convinced that it is important to adopt an inter-disciplinary approach when tackling these ailments, which is why we have stipulated that the new projects are to bring together expertise from various fields”, says Professor Inger Björk, who is Director of the Functional Food Science Centre. The projects that have been approved to date fall within three principal areas of competence, and focus on the development and documentation of functional food concepts, food design and quality assurance with regard to the added health value of the new products, and ensuring that this added value is communicated to consumers and the market.

Undergraduate Studies

In 2005 we had the pleasure of being able to award more degrees than ever before. The bulk of the increase is attributable to our MSc courses, where the programmes which started in 1998 – Industrial Management & Engineering and Environmental Engineering – have started to appear in the statistics. The Risk Management programme also contributed to the rise.

2004 was rounded off with a degree ceremony for graduates from the International Masters programmes in Water Resources, System on Chip, and Bio- & Food Technology. These programmes have been very successful, and the students graduated with excellent results. The foundation of this success is organisational professionalism, both at LTH's International Unit and within each respective department. Although LTH has comparatively few International Masters programmes we have now established a fund of knowledge and experience which can serve as a basis for providing an expanded range of second-degree courses. The students on the International Masters programmes are integrated into the courses of our MSc programmes; this solution has proved to be both effective and enriching.

At the School of Engineering in Helsingborg, the first students graduated from the Masters programme in Industrial Building with Design. This course, which entails three terms (one and a half years) of postgraduate study, is run in close collaboration with local industry and trade organisations. This educational philosophy can serve as a model for competence development in the future, with education and research developing in symbiosis with an innovative industry which is prepared to take responsibility both for educational input and for providing employment for students after graduation.

In Sweden as a whole there was a slight drop in the total number of applicants for places on degree courses in the technological and engineering sciences; that being said, in comparison with other institutes of technology there was no notable drop in the number of student places awarded at LTH. The reasons for this include the fact that programmes such as Industrial Management & Engineering, Surveying, and Engineering Nanoscience attract so many applications that we have been able to increase the number of places awarded. LTH has thus been able to maintain its strong focus on providing long courses of vocationally oriented education – which is in line with both the expectations of government and the needs of the labour market.

The institutes of technology in Sweden have for a number of years been recording decreasing numbers of applicants. To a large extent this has been due to over-establishment at the national level, but it also reflects the over-emphasis that has been given to IT. The trend seen across Europe with waning interest in Chemistry and Chemical Engineering has hit university-level courses with a molecular specialisation particularly hard. However, up until 2004 LTH's Helsingborg-based engineering programmes fared relatively well against the competition, with the Industrial Building with Design programme showing particular strength following a lean period in the late 1990s. Nevertheless, in response to the falling demand for places, during 2004 we found ourselves forced to take the difficult decision to focus our engineering and technology programmes. In autumn 2005 there will be an intake onto a broad Computer Science & Technology programme, and also onto a Construction Technology programme which will have three specialisations, one relating to house-building and two concerned with infrastructure. LTH is thus discharging its responsibility to contribute towards supplying the region with competence in these important fields of engineering.

Towards the end of the year we started the work of preparing for the evaluation of MSc programmes to be carried out by the National Agency for Higher Education in 2005. Even at this early stage it is clear that, across the different departments, there is a high level of commitment towards our study programmes. The Evaluations Unit at Lund University carried out, in collaboration with the LTH Student Union, a questionnaire-based study similar to the 'Student Barometer' investigation conducted in 2000. The preliminary findings reaffirm the picture the students gave of their courses: our programmes provide a broad-based, vocationally oriented education of a high standard which enables students to develop both their engineering knowledge and their personal qualities. The recent study also shows a radically improved level of confidence among students for LTH's course evaluations, as a result of our introducing a uniform evaluation methodology for all programmes. An ability to build on our students' strong desire to take responsibility for their own education and for the development of LTH is crucial for the future well-being of the Institute.

In 2004 we appointed on a trial basis two 'Grade Appeals Officers', whose task is to represent students who feel that they have been unfairly assessed in examinations. Since being appointed the Grade Appeals Officers have had relatively few cases to deal with, which can be interpreted as showing that lecturers and departments do a good job when it comes to examinations. At the same time, the fact that they can have recourse to the Grade Appeals Officers means a lot to those students who do feel unfairly treated, so our experiences to date suggest that the two Grade Appeals Officer posts will be made permanent.

Student Intake

Number of full-time student equivalents (FTE), annual performance equivalents (APE) and degrees awarded (Deg.) in 2003 and 2004 (calendar years)

	2003	2003	2003	2003	2004	2004	2004	2004
	FTE	APE	APE/FTE	deg.	FTE	APE	APE/FTE	deg.
Master's Programmes								
Biotechnology	160	135	0,84		213	181	0,85	
Computer Science & Technology	552	468	0,85	83	500	441	0,88	116
Environmental Engineering	211	191	0,91	13	224	199	0,89	24
Electrical Engineering	578	488	0,84	105	528	419	0,79	128
Industrial management and engineering	298	251	0,84	19	342	273	0,80	32
Information and communications engineering	120	97	0,81		148	120	0,81	
Chemical Engineering	353	326	0,92	84	334	289	0,87	85
Surveying	160	139	0,87	31	166	170	1,02	27
Mechanical Engineering	642	567	0,88	125	721	625	0,87	115
Risk Management	70	61	0,87	14	85	84	0,99	27
Engineering Physics	457	372	0,81	75	444	367	0,83	75
Engineering Mathematics	55	43	0,78		104	76	0,73	
Engineering Nanoscience	21	12	0,57		63	39	0,62	
Civil Engineering	432	383	0,89	57	486	400	0,82	55
Other								1
Total for Master's Programmes	4109	3533	0,86	606	4358	3683	0,85	685
Architecture								
Architecture	309	220	0,71	33	289	278	0,96	48
Fire Safety Engineering	147	144	0,98	30	157	146	0,93	41
Industrial Design	117	107	0,91	10	134	117	0,87	12
Bachelor's Programmes								
Biotechnology	58	39	0,67		54	56	1,04	14
Construction Engineering	98	68	0,69	15	131	102	0,78	6
Computer Science & Technology	59	48	0,81	2	62	45	0,73	8
Electrical Engineering	52	48	0,92	27	40	37	0,93	8
Geomatics	8	8	1,00		3,5	3	0,86	
Chemical Engineering	23	21	0,91	13	18	19	1,06	5
Multimedia Engineering	102	77	0,76	20	87	95	1,09	17
Production Engineering	17	16	0,94	6	7,6	7,8	1,03	
Software Engineering	60	58	0,97	13	36	40	1,11	13
Total for Bachelor's Programmes	477	383	0,80	96	439	405	0,92	71
Master's Programmes								
	42	24	0,57		121	92	0,76	9
Second-degree courses for								
BSc graduates	0,7	2	2,86	8	0,5	1	2	4
Vocational Food Technology Programme	69	54	0,78	27	66	48	0,73	22
Foundation Year	61	49	0,80		70	55	0,79	
Separate course modules etc.	510	316	0,62		474	373	0,79	

Recruitment

New students at LTH

MSc Programmes	2004	2003	Bsc Programmes	2004	2003
From Skåne*	58%	57%	From Skåne*	72%	73%
Have Swedish as mother tongue	92%	90%	Have Swedish as mother tongue	85%	75%
Supplemented school education via adult education programme	17%	16%	Supplemented school education via adult education programme	27%	31%
Given place on first-choice programme	70%	76%	Had LTH as first choice	74%	79%
Straight from upper secondary college	24%	26%	Straight from upper secondary college	25%	28%
Women	25%	28%	Women	14%	28%

*Skåne is the southernmost region of Sweden

Total proportion of women recruited to programmes (%)

	2004	2003	2002
MSc	25	28	26
BSc	14	29	35
Architecture	66	54	58
Fire Safety Engineering	28	17	24
Industrial Building with Design	47	58	61
Master's Programmes	28	28	

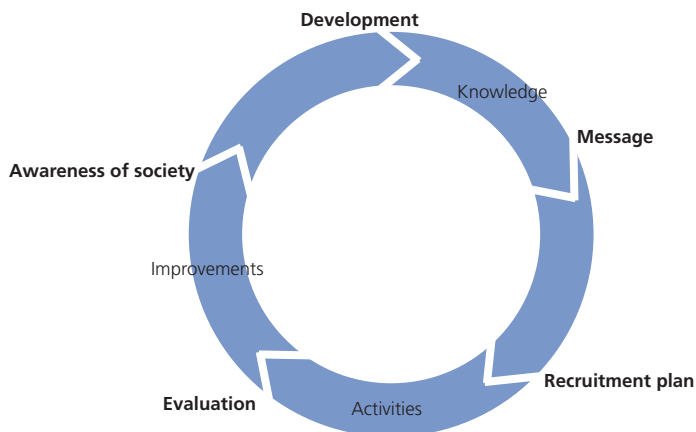
Reasons for choosing LTH

	2004	2003	2002
Close to home	39%	40%	35%
Good reputation	67%	70%	67%
Lund	68%	68%	68%

Source of information leading to choice of LTH in 2004

Source	2004	2003
Friends	22%	21%
LTH prospectus	19%	17%
Internet	14%	10%
Visited LTH	12%	12%
National Agency for Higher Education directory	10%	10%
LTH students	7%	10%
School careers advisor	2%	2%
Teachers	2%	2%

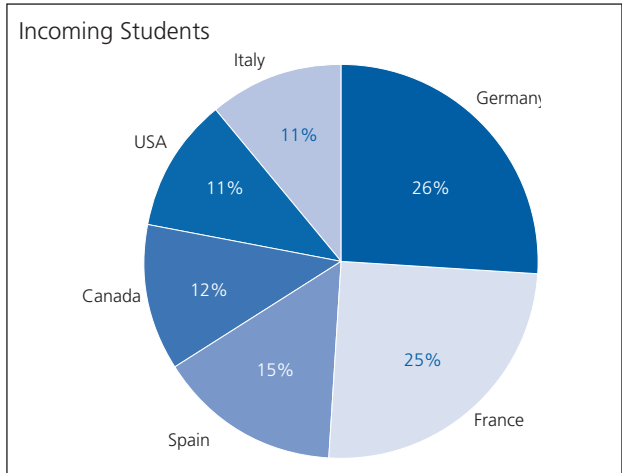
The Student Recruitment Process



International Collaboration

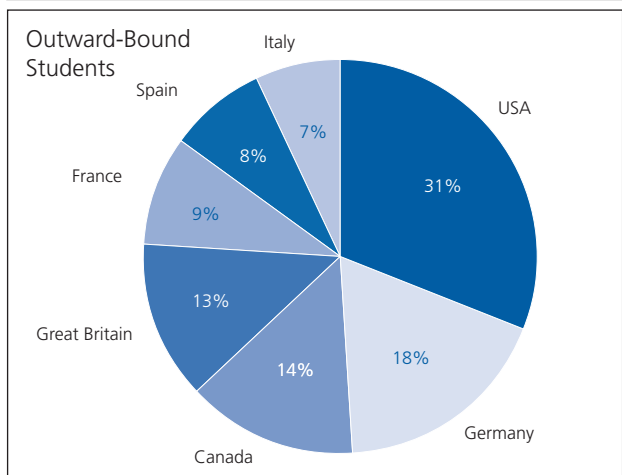
Incoming Students

	2004	2003
Rest of Europe	317	335
North America	63	9
Nordic countries	25	39
Australia and New Zealand	17	39
Asia	5	3
South America	9	5
Total	436	390



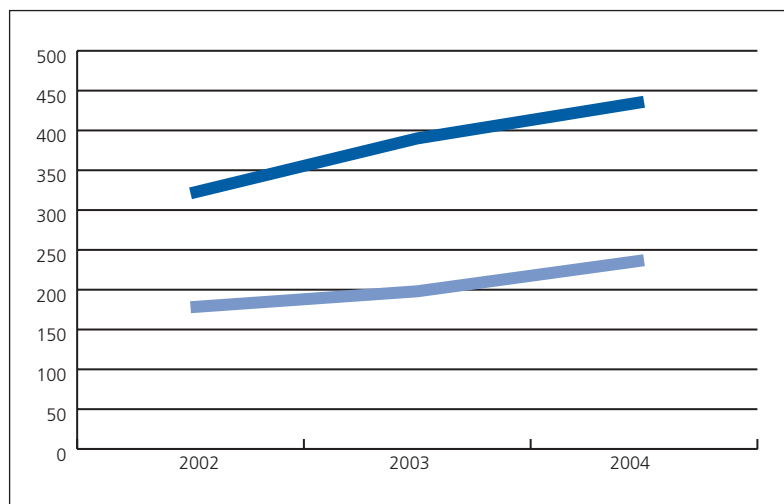
Outward-Bound Students

	2004	2003
Rest of Europe	116	102
North America	76	62
Nordic countries	17	12
Australia and New Zealand	11	13
Asia	11	8
South America	6	1
Total	237 *	198



*Figure exclusive of students who complete their dissertation/thesis abroad.

Exchange Balance at LTH, 2002–2004



LTH's international initiatives in undergraduate education in 2004

2004 saw more students than ever choosing to study abroad. The courses where a large proportion of students traditionally spend periods of study at universities in other countries are still dominant in the statistics, while the students of the newer programmes have also started demanding the possibility of spending a period of study abroad, and this trend is now also registering in the figures. Architecture and Engineering Physics are still the two programmes that send the greatest number of students abroad; and we are beginning to be able to offer the same opportunity to students of the Industrial Management & Engineering programme.

During the year we concluded new exchange agreements, particularly for students of Surveying and Industrial Building with Design, since it is difficult for them to find suitable universities and colleges among the institutes with which we already have exchange agreements.

In 2004 we worked on setting up exchange structures in South America, in accordance with our students' wishes; LTH is the first faculty of Lund University to have established exchange agreements on the continent at undergraduate level. We have concluded agreements with universities in both Brazil and Chile. As part of these initiatives, for the Surveying programme we have set up a net-based course, taught from LTH for Chilean students – which has proved to be a popular and successful venture.

At the same time as we have students asking us to find them places on new continents, there is still a high level of interest in English-speaking universities. Most students who study abroad do so in other European countries, but more and more are going to North America as our co-operation with institutes on the continent has expanded and improved, meaning that we can send more students to America as a result of being able to receive more American students in Lund. This has been made possible as a result of our having course modules that are taught in English, and arranging courses in Swedish which our foreign exchange students appreciate. Among the European countries to which students travelled to study in 2004, the most popular destination was Germany, followed by Great Britain, France, Spain and Italy.

The number of incoming exchange students continued its upward trend, with LTH welcoming over 400 foreign students in 2004. Most of them were ERASMUS students from other European countries; the native countries which featured most prominently among the year's foreign student intake were Germany, France and Spain, as in previous years. A new feature in 2004 was the marked increase in the proportion of incoming exchange students from North and South America. This is a positive development, since it means in turn that there will be more opportunities for LTH's students to study in these countries, with regard to which the demand for places has always outweighed availability.

The three International Masters degree programmes that were launched in 2002 –

- Master in Bio- & Food technology;
- Master in System on Chip;
- Master in Water Resources

consolidated their position. The number of applicants for the second intake was undiminished, despite the fact that the only marketing of the programmes has been on the Internet. The first intake onto the programmes graduated at Christmas 2004, an occasion which was marked with a degree ceremony in Lund University's main hall.

It is popular among students to spend a period of work experience abroad; and our female students took advantage of the opportunity to seek grant funding for this from WITEC – WomenInTEchnology. A large number of our students prepared their dissertation or thesis abroad, some of them having received an MFS (Minor Field Study) grant from SIDA (the Swedish International Development Authority).

Postgraduate Studies

In 2004 we had the pleasure of seeing a number of students complete their research degrees; at the same time, however, we note that the difficult financial situation which a number of departments are facing and which requires the implementation of vigorous cost-cutting measures, led to reduced recruitment of research students in 2004, with a concomitant increase in the proportion of industrially based PhD students. This fall in the number of new postgraduate students is naturally a serious development which we have every reason to follow closely, with concern for the future.

The proportion of postgraduate research students with correctly updated study schedules increased during 2004, but there are still a number of students for whom this compulsory instrument is not yet working satisfactorily. We are working on ways of rectifying this situation.

2004 saw the start of the training scheme for prospective PhD thesis supervisors arranged by LTH as an alternative to the centrally organised course run by the Learning and Teaching Development Centre at Lund University (UCLU). LTH's scheme involves a two-day programme, which leads to the official qualification for thesis supervisors and has been planned in collaboration with UCLU; four such courses were held in 2004, and we plan to continue the initiative in 2005. Roughly 100 supervisors have completed the course, and the evaluations that have been carried out show that results have been good. Older supervisors can help their younger colleagues with their experience, while at the same time benefiting from the opportunity to update their knowledge of the changed rules applying in postgraduate education.

In a number of questionnaire-based evaluations, our research students have pointed out significant shortcomings in the introductory phase of postgraduate education programmes. As part of our endeavour to put things right we have started holding shorter, central induction meetings with new PhD students, in the aim of ensuring that all those embarking on research study programmes can get off to a good start.

Postgraduate Students 2004–2002

	2004	2003	2002
Enrolled	107	167	139
Women %	33	30	27
PhD	127	114	95
Women %	28	29	33
Licentiate degrees	63	91	77
Women %	30	24	22

NANO

Swedish nanotechnology expert invited to AAAS scientific congress in USA

Lars Samuelson, Professor of Solid State Physics at LTH, was invited as the only Swede to address one of the world's most prestigious scientific conferences, the AAAS Annual Meeting in the USA, which was held in Washington DC between 17 and 21 February. AAAS (the American Association for the Advancement of Science), which also publishes the scientific journal *Science*, has arranged its annual congress almost every year since 1848; the meetings are attended by thousands of research scientists and journalists from all over the world.

Lars Samuelson was invited to the congress to talk about nanowires, which are extremely slender semiconducting materials consisting of structures which are no more than millionths of a millimetre thick. By building one atomic layer at a time, the researchers have succeeded in reaching down to dimensions technology has never previously achieved. The title of Professor Samuelson's lecture was 'Low-Dimensional Physics and Applications of Semiconductor Nanowires'. This is a field in which the Lund research team has attracted a great deal of attention, and is at present at the very forefront of worldwide developments. For example, in 2004 the team had three articles on their work published in *Nature Materials*.

"Since the wires are semiconducting, they can be used for making electronic components, which is expected to lead to a whole series of interesting developments in the fields of electronics, optics and biomedical technology", Lars Samuelson explains. "It's perhaps no coincidence that several of the big electronics concerns, such as IBM, Philips and Infineon, are in the process of setting up R&D projects, where they're aiming to build further on the discoveries we've made here over the last two years."

Professor Samuelson is the Director of the Nanometre Structure Consortium (<http://nano.lth.se>), which brings together industry and seventy researchers from ten departments at Lund University to work on research into and practical applications of nanostructures. He has also instigated a new MSc programme in Engineering Nanoscience (www.teknisknanovetenskap.lth.se) at LTH/Lund University, which started up in 2003 with the ambition of providing Swedish industry with well-qualified staff in this important area of technology.

Research

2004 was another positive year. Lund University has a strong position in the Swedish research community, and LTH makes a major contribution to this standing. LTH also benefits greatly from being part of Lund University's multi-faceted organisation for research and education, with its excellent opportunities for working in a multi- or inter-disciplinary manner. This advantage is further strengthened by the fruitful collaborations we have with institutes and universities on either side of the Sound. Following a less successful year in 2003, 2004 saw a degree of recovery, with an increase in grant funding from external sources, despite the fact that this is still a scarce resource in the current economic climate. A lot of our research projects have produced excellent results, and attracted positive attention to LTH.

As an example of LTH's success in the research world, three of the recently awarded INGVAR grants went to researchers based at LTH. These grants go to 'Leading researchers of the future', and a total of eighteen are awarded in the whole of Sweden in all areas of research. Similarly, several environments at LTH are in line for classification as 'Centres of Research Excellence', which will qualify them for additional, long-term funding from bodies such as the Swedish Research Council (SSF), Formas (the Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning) and VINNOVA (the Swedish Agency for Innovation Systems). In addition, a number of proposals submitted by Lund University to SSF and entailing significant involvement from LTH have been accorded high priority.

Nevertheless, despite all our successes the future is still uncertain; for example, there have been severe (possibly only temporary) cutbacks in funding for energy research, a field where LTH to date has received major grant funding. Other providers of research financing are also unsure as to what the immediate future holds, which presents the various departments at LTH with serious difficulties when it comes to planning their work.

LTH is involved in an increasing number of projects within the EU's Framework Programme, and indeed, many of the projects are being directed and co-ordinated from LTH. In spite of certain problems relating to the contribution made by the EU projects to the necessary infrastructure and technical and administrative support, EU funding represents a significant, and increasing, source of LTH's external research financing. In addition we can offer two large-scale facilities and several training sites for research students. 2004 also saw several lecturers promoted to the position of Professor, which is further proof of the high level of academic standards at LTH.

Contacts with Industry

The industrial structure in the Lund region, which is characterised by a small number of large companies and a small number of industrial research institutes, is reflected in the way collaboration takes place between the departments of LTH and the corporate world. We have very good contacts with several areas of industry, and companies seem to understand that the main contribution LTH can make is in the transfer of knowledge in the form of degree projects and students who are employed after graduation. At the same time, a lot of very fruitful R&D work is carried on in the form of direct collaboration between researchers and companies. The proportion of LTH's external funding that comes from private sources has increased over recent years, and generally speaking, industry's increasing interest is a positive factor, which further raises LTH's profile. It is however important to emphasise that this kind of joint venture requires a continuing high level of integrity on the part of the recipients of such funding, in order to ensure that there is no clash between paid consultancy and the pursuit of research and development in accordance with LTH's scientific interests. We have also initiated a process of dialogue with a number of research institutes with the aim of establishing closer collaboration.

As a further element of our work to increase the level of collaboration and interaction with industry we are planning to integrate into our undergraduate programmes more extensive contacts with central areas of Swedish trade and industry, by arranging annual meetings between representatives of industry and the students of the various programmes. The purpose of this measure is to raise still higher the quality of the education we provide, and to increase the employability of our architects, industrial designers and MSc graduates by establishing better contact between them and potential future employers

Income from private Swedish companies (SEKm)

	2004	2003	2002
Income	88	85	97
Change	4%	-12%	+12%

7% of LTH's total income in 2004 was funding from private Swedish companies.

LTH in the Media

LTH's visibility in the press and other media increased by approximately twenty per cent in 2004; LTH was mentioned in roughly 1,200 articles or broadcasts, compared with a figure of just over 1,000 for 2003. The articles are divided fairly evenly between daily newspapers and trade journals (texts published in purely scientific publications are not included in these figures). Some of these articles had as their source one of the fifty or so press releases prepared during the year; and in certain cases, articles first published in the LTH Newsletter were brought to a wider readership. Many of the articles in trade journals and the like were written by researchers based with us. Two press releases attracted international attention – one relating to nanowires, and the other relating to Technolution pictures in Alexandria.

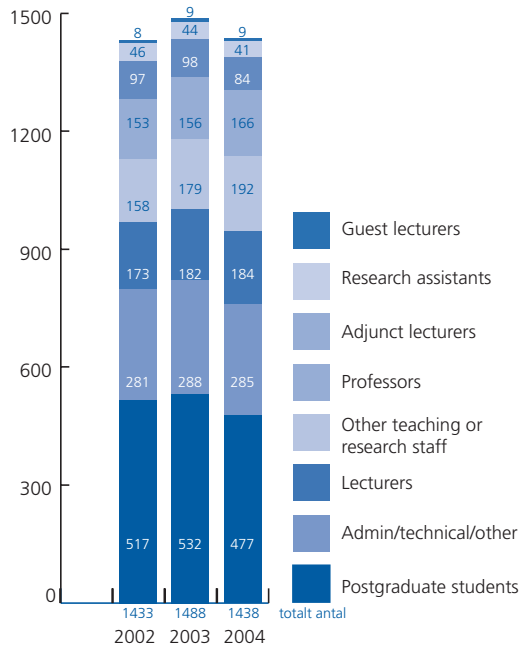
Our Communications Department has on average once a week suggested suitable experts for journalists to contact, via the 'Experts with Answers' service of the Swedish Research Council.

No. of press articles per year

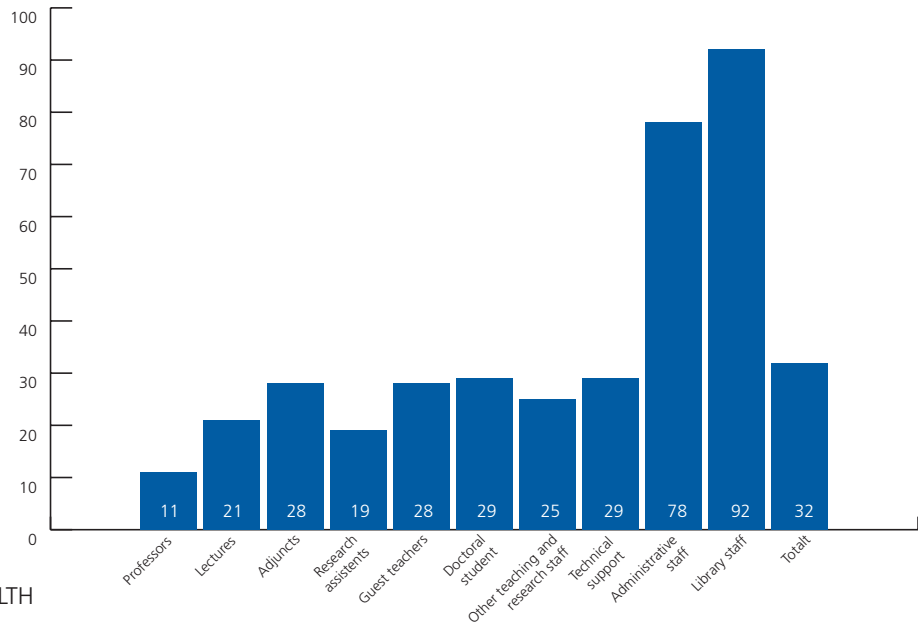
	2004	2003
Daily broadsheets	622	573
Trade journals	539	500
News agencies	14	26
Popular press	17	9

Staff

Total No. of employees, permanently employed and project staff, as full-time equivalents (FTE)



... of which women as a percentage:



No. of project appointments at LTH as of October 2004

	No.
Adjunct professors	18
Adjunct lecturers and temporary cover	22
Adjunct teaching assistants and temporary cover	17
Research assistants	44
Guest lecturers	11
Postgraduate students	509
Other teaching or research staff	121
Technical support staff	6
Administrative staff	48

New permanent appointments in 2004

	No.
Professor (Dr F. Höök)	1
Promoted to Professor	7
Lecturers	15
Adjunct professors*	2

* Project appointments

Honorary Doctors in 2004

The Lund Institute of Technology awarded three honorary doctorates in 2004, which were conferred at the PhD graduation ceremony at Lund Cathedral on 28 May 2004.

Professor Richard C Flagan

Professor Richard C. Flagan is a professor at the California Institute of Technology. He is acknowledged as one of the world's leading researchers in the study of small particles in the air and other gases – aerosols. This area of technology has applications in fields such as materials technology, nanoelectronics and occupational health, as well as the study of how atmospheric aerosols affect the earth's climate. Professor Flagan has developed faster methods for measuring the dispersal of different-sized particles, as well as a more reliable method for calculating particles' cloud-formation ability. His work is of considerable interest to LTH, and fruitful contact and collaboration has been established, to the benefit of both research and teaching in areas such as solid state physics, nuclear physics, and ergonomic and aerosol technology (involving subject areas such as nanoelectronics, aerosols, cloud formation, climate issues, indoor and occupational environment, cleanroom technology, etc.). Professor Flagan has given much-appreciated lectures and courses at LTH, and an extensive exchange of PhD students has been developed.

Mikael Isaksson, MSc

Mikael Isaksson, MSc, who is Managing Director of UpZide Labs AB in Luleå in northern Sweden, has played a major part in the development of VDSL, which is a new form of broadband connection via telephone wires, enabling much faster data transmission than ADSL. Mikael Isaksson holds more than fifteen patents in the field of digital communication and signal processing, and in Digital Duplexing created a technology which has become standard. As a result of his previous involvement with Telia Research in Luleå he established close co-operation with researchers at Swedish universities, with ST Microelectronics in France, the Swedish National Post and Telecom Agency, and Ericsson. He introduced DSL into university research, and several EU projects involving Swedish researchers have been initiated. Mikael Isaksson's pioneering work has been of major importance to the development of Swedish industry and its strong position in international comparisons. Rewarding collaborative projects with researchers in the field of signal processing have enabled LTH to establish a respected research platform in the domain of DSL and broadband.

Dr Virapong Prachayasittikul

Dr Virapong Prachayasittikul is at present Dean of the Faculty of Medical Technology at the University of Mahidol in Bangkok. His area of expertise is clinical microbiology. Dr Prachayasittikul has made several significant contributions to research, in particular with regard to antibiotic-resistant bacteria. In 2002 he was designated the leading scientist in the field of medical microbiology in Thailand. Dr Prachayasittikul has initiated several research collaborations with Lund University and other universities in Europe and the USA, and he has also carried out important work for WHO. Dr Prachayasittikul has played an instrumental role in developing fruitful collaboration and exchange programmes between researchers and postgraduate students at the University of Mahidol and LTH in the field of applied biochemistry. Dr Prachayasittikul is a respected scientist with an influential position in his native country, which means that he will be able to extend still further the important role he plays in promoting LTH's visibility in South-East Asia.

Grants and Prizes

SYSAV scholarships (in recognition of developments in waste treatment technology) were awarded in 2004 to:

Maria Kollberg, for her Masters dissertation *Exploring the environmental effectiveness of extended producer responsibility programmes*.

Gunilla Viklund, for her degree dissertation *Combined UV-biological treatment of polycyclic aromatic hydrocarbons*.

Anna-Karin Jönsson, for her degree dissertation *Resistivity and induced polarisation measurements as a tool in environmental geophysics*.

Mikael Svensson, for his degree dissertation *Leaching properties of foamed bitumen treated municipal solid waste incineration bottom ash*.

The Industrial Design students Anna Eriksdotter Nilsson and Jeff Parry won first prize in a design competition organised by Ideon.

The Sparbankstiftelsen Färs och Frosta foundation awarded prize money totalling SEK 100,000. Per Östborn received the prize for Best PhD Thesis. The postgraduate students Louise Johansson and Anders Robertsson, and students Kristina Helstad and Charlotte Alklint were awarded scholarships, and Martin Hansson received a travel scholarship.

A team from LTH consisting of Toivo Perby Henningsson, Gustav Lindström and Fredrik Andersson won the 'Swedish Tech-Knowledge Championship' quiz (for two of the team it was their second victory in as many years).

The Albihns Prize for Innovation went to the Erysave company, the roots of which stem from, among others, Thomas Laurell at the Department of Electrical Measurements.

The Axis Prize, worth SEK 50,000, went to Mauel Astudillo and Sami Niemi for their degree project on network video.

Henrik Aamisepp and Daniel Nilsson were awarded a scholarship from the Skånska Sparbankstiftelsen foundation for their degree project in Computer Science & Technology.

Marie Jeppsson and Benoit Guyesse were awarded scholarships by the King Carl Gustaf XVI Jubilee Foundation for their research projects in Biotechnology.

Professor Per-Johan Gustafsson, Structural Mechanics, was awarded a prize by the Resonator Foundation.

Professor Sven Axsäter was awarded the Harold Larnder Memorial Prize by the Canadian Operational Research Society.

The Venture Cup was won by Tord Bergquist, Jonas Ahnlund and Professor Jan-Eric Larsson; their company is called Silent Control.

The 2004 Innovation Prize went to Iset-plattan, a company created at the Department of Electrical Measurements.

Christian Söderberg received the Åforskpriset prize for Best Teacher of Technology.

The Skapapriset prize went to the SpectraCure company, established with involvement from Professor Sune Svanberg, Atomic Physics.

Åsa Åkerström was adjudged to have produced the year's best degree project on district heating.

The Paper Province Packaging Award for 2004 was completely dominated by students from LTH. First prize went to Emelie Hallgard and Hanna Tufvesson.

(This list is not exhaustive.)



Waste water in the urban environment

Washing clothes using collected rainwater and allowing grass to grow on rooftops are two examples of improved management of waste water. In the future, methods such as these will be increasingly common, according to Edgar Villareal-Gonzalez, who has analysed and evaluated new possible approaches in a study to be published by the Lund Institute of Technology.

The background to his research is the fact that present-day water supply and sanitation systems, where waste water is drained away in underground pipes and contributes to the pollution of rivers and lakes, are seen to be inefficient and ecologically unsound. Within the framework of the MISTRA-financed research programme 'Urban Water', which is concerned with exploring possible solutions for the urban water and sewage systems of tomorrow, Edgar Villareal-Gonzalez has studied and evaluated three new innovative ideas for dealing with waste water:

In the Ringdansen housing area in Norrköping, he has analysed the possibility of installing a system that enables households to re-use rainwater. "My study shows that if we, instead of using tap-water, re-use rainwater for washing clothes or the car, watering the lawn and so on, then it's possible to reduce average water consumption by up to sixty per cent. Setting up a whole new system does of course entail some initial costs, but in the long run it saves both money and the environment", Villareal-Gonzalez explains.

In the 'eco-borough' district of Augustenborg in central Malmö he analysed the green roofs in the area – in other words, roofs covered with Sedum grass in order to reduce run-off. "My experiments confirm the assumption that less rainwater runs off from green roofs, which in turn means that there are reduced volumes of waste water in the sewage pipes. This is what we have always assumed, but never previously been able to prove. Two further pluses are that the roofs are attractive, and that they have an insulating effect", says Villareal-Gonzalez.

Edgar Villareal-Gonzalez has also studied the open waste-water drainage system in Augustenborg, together with a similar system in the Bäckaslöv wetland in Växjö. In these kinds of system, waste water drains away via canals and pools, above ground. "Owing to evaporation and the retentive effect, these systems lead to a reduction in the total volume of waste water. What's more, in Malmö the canals are an attractive feature of the townscape, while Bäckaslöv wetland is a site for recreation and wildlife as well as constituting an outdoor laboratory", Edgar Villareal-Gonzalez concludes.

Finance

LTH's Financial Performance in 2004

Operations in 2004 recorded a loss, after adjustments, of SEK 16 million; this in a business with an annual balance-sheet total of SEK 1,282 million. The deficit booked for 2004 is SEK 67 m. The whole of the deficit is connected with operations financed by external funding, and commissioned research. A large part of the deficit is a result of the fall in income in 2004 caused by adjustments of previous years' accounts – the adjustments entail reversing the booked income in subsequent years' accounts.

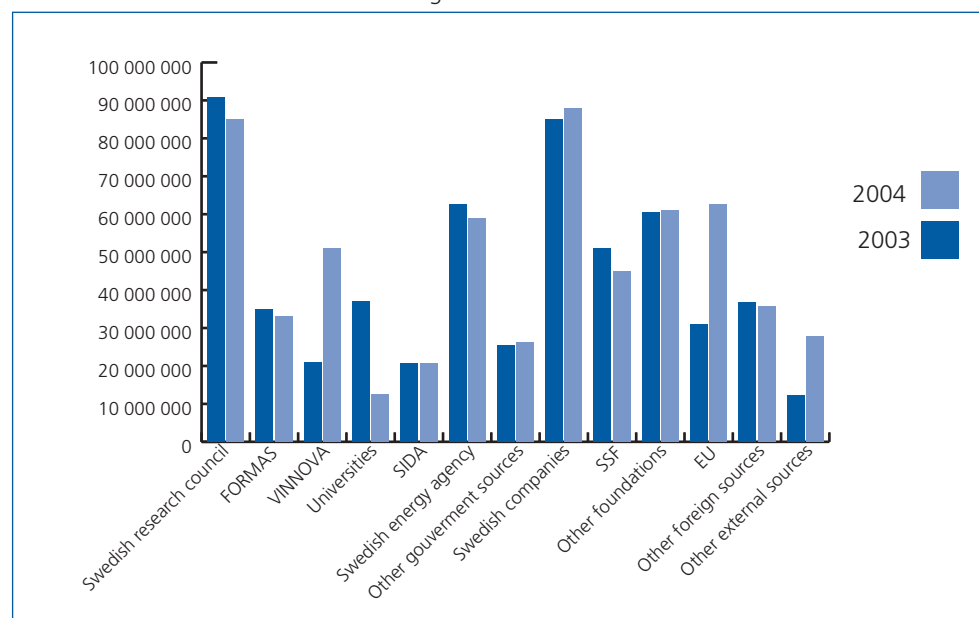
Our high level of dependence on external research finance means that we are particularly vulnerable to changes in our financiers' circumstances. In 2004, 69 per cent of the finance for research and postgraduate studies came from external sources. Given the constant and rapid changes that affect our external sources of finance, the sum of venture capital made available to LTH in the form of the faculty grant ('Faculty appropriation for research and postgraduate studies') is not large enough.

A further consideration is the fact that the cut-backs in the IT sector are affecting institutes providing education in this field. At the same time, there is still a low level of interest in Chemistry programmes and shorter courses in engineering and technology subjects. Our work of increasing productivity and giving clearer focus to our operations continues, and our objective is to achieve financial balance in the course of 2005.

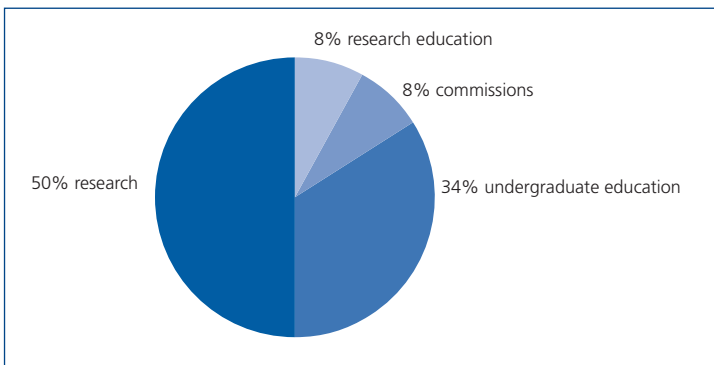
Investment (SEK thousand)

	2004	2003	2002
Undergraduate education			
Investment	5 475	11 585	11 253
Income	451 808	442 188	418 861
Investment/Income	1%	3%	3%
Research/Postgraduate education			
Investment	32 063	48 363	62 701
Income	735 481	788 341	745 926
Investment/Income	4%	6%	8%
Commissions			
Investment	3 191	1 724	4 902
Income	105 099	103 769	99 041
Investment/Income	3%	2%	5%
Income exclusive of transfers			

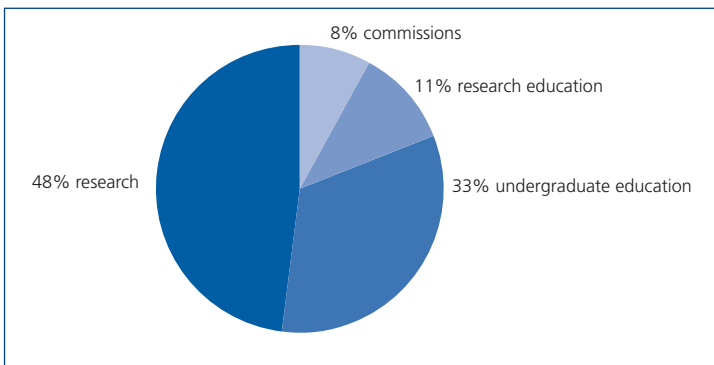
Income from external sources of financing



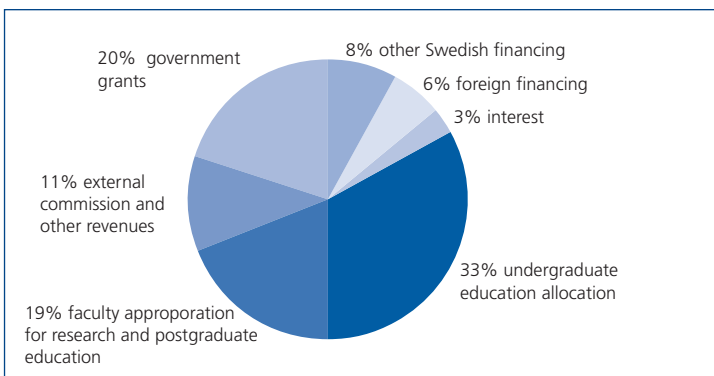
Expenditure according to area of activity



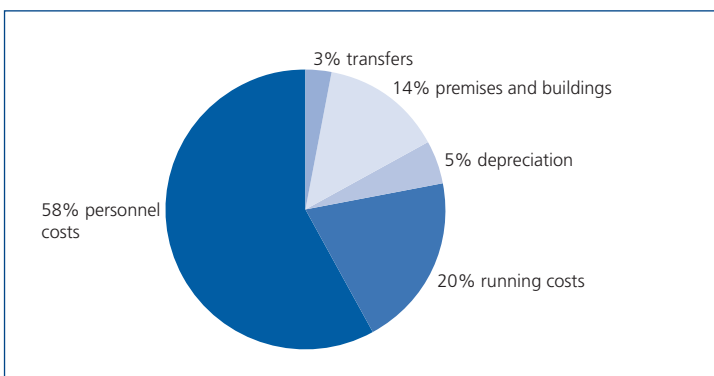
Cost according to area of activity



Sources of financing



Cost by type



Statement of income and expenses (SEK thousand)

	2004	2003	2002
Operating income			
Central government allocation	655 143	638 313	611 204
Income from commissions, fees and other remuneration	193 666	171 467	150 299
Income from grants	441 127	516 277	490 182
Total operating income	1 289 936	1 326 057	1 251 685
Operating expenses			
Premises and buildings	182 363	195 566	190 315
Running costs	323 758	302 230	288 110
Personnel costs	788 350	781 348	717 795
Total operating expenses	1 294 471	1 279 144	1 196 220
Income before depreciation	-4 535	46 913	55 465
Depreciation	64 262	67 695	66 686
Income after depreciation	-68 797	-20 782	-11 221
Final income and expenses			
Interest income	2 016	5 842	7 528
Interest expenses	-536	-28 448	-23 941
Adjustment for internal elimination	-67 317	-43 388	-27 634
Adjustment for external elimination	678	3 741	8 000
Change in capital during the year	-66 639	-39 647	-19 634

Balance sheet (SEK thousand)

	2004	2003	2002
Current assets			
Inventory	149 838	170 516	173 489
Accounts receivable	37 214	28 011	37 235
Accrued income-grant providers	104 441	314 852	302 011
Other interim receivable	7 346		66
Cash	213 320	231 974	317 578
Total assets	512 159	745 353	830 379
Liabilities and administrative capital			
Change in capital brought forward	67 635	111 533	138 623
Change in capital for the year	-67 317	-43 388	-27 634
Liabilities			
Other current liabilities	21 811	28 809	32 343
Loan RGK (internal loan)	12 956	10 665	18 519
Accounts payable	9 639	8 698	31 653
Prepaid income	422 453	581 923	591 602
Accrued salaries	44 982	47 113	45 273
Total liabilities and agency capital	512 159	745 353	830 379

Expenditure according to area of activity (SEKm)

	2004	2003	2002
Total LTH (SEKm)			
Revenue	1 334	1 360	1 299
Expenses	1 401	1 403	1 327
Profit/loss	-67	-43	-28
Agency capital	0		
Undergraduate education (SEKm)			
Revenue	452	442	419
Expenses	448	457	443
Profit/loss	4	-15	-24
Administrative capital	-7		
Research and postgraduate education			
Revenue	780	812	777
Expenses	841	845	783
Profit/loss	-61	-33	-6
Administrative capital	-11		
Commissions (SEKm)			
Revenue	103	106	103
Expenses	113	102	100
Profit/loss	-10	4	103
Administrative capital	18		

Balance sheet for each area of activity (SEK thousand)

Undergraduate education	2004	2003	2002
-------------------------	------	------	------

Operating income			
Central government allocation	409 923	398 993	375 165
Income from commissions, fees and other remuneration	27 776	33 207	28 611
Grants	13 852	8 856	12 397
Total undergraduate education	451 551	441 056	416 173

Operating expenses			
Running costs	200 680	176 338	172 410
Personnel costs	234 841	263 493	249 087
Total	435 521	439 831	421 497
Total before depreciation	16 030	1 225	-5 324
Depreciation	11 480	16 680	18 421
Total after depreciation	4 550	-15 455	-23 745
Interest expense	176	466	137
Net interest income	-71	-118	-132
Total undergraduate education	4 655	-15 107	-23 740

Research, faculty appropriation	2004	2003	2002
---------------------------------	------	------	------

Operating income			
Central government allocation	211 214	195 061	166 067
Income from commissions, fees and other remuneration	13 465	9 893	6 295
Grants		-6	1 375
Total researchn faculty appropriation	224 679	204 948	173 737

Operating expenses			
Running costs	95 537	73 511	70 273
Personnel costs	98 649	115 893	93 628
Total	194 186	189 404	163 901
Total before depreciation	30 493	15 544	9 836
Depreciation	6 338	8 790	8 856
Total after depreciation	24 155	6 754	980
Interest expense	-198	399	505
Net interest income			-85

Expenditure according to area of activity (SEKm)...

Postgraduate education, faculty appropriation	2004	2003	2002
---	------	------	------

Operating income			
Central government allocation	34 006	44 259	63 536
Income from commissions, fees and other remuneration	1 022	464	151
Grants	0	7	107
Total	35 028	44 730	63 794

Operating expenses			
Running costs	10 430	13 525	13 572
Personnel costs	41 302	47 517	54 218
Total	51 732	61 042	67 790
Total before depreciation	-16 704	-16 312	-3 996
Depreciation	368	338	253
Total after depreciation	-17 072	-16 650	-4 249
Income from interest	-30	-40	-59
Net interest income			-72
Total Postgraduate education, faculty appropriation	-17 102	-16 690	-4 380

Research grants	2004	2003	2002
-----------------	------	------	------

Operating income			
Central government allocation	0	-15	6 252
Income from commissions, fees and other remuneration	39 945	23 402	26 787
Grants	380 577	436 324	394 967
Total	420 522	459 711	428 006

Operating expenses			
Running costs	213 218	177 276	168 344
Personnel costs	231 637	237 371	209 007
Total	444 855	414 647	377 351
Total before depreciation	-24 333	45 064	50 655
Depreciation	35 862	30 868	33 481
Total after depreciation	-60 195	14 196	17 174
Income from interest	1 176	3 937	5 503
Net interest income	-1 454	-27 899	-23 154
Total for research grants	-60 473	-9 766	-477
Adjustment for externally financed equipment	668	-2 411	6 500
Total, research grants after adjustments	-59 805	-12 177	6 023

Research education grants	2004	2003	2002
---------------------------	------	------	------

Operating income			
Central government allocation	0	15	131
Income from commissions, fees and other remuneration	7 468	3 459	6 751
Grants	46 317	70 254	66 290
Total	53 785	73 728	73 172

Operating expenses			
Running costs	25 023	22 225	18 398
Personnel costs	40 646	64 339	55 867
Total	65 669	86 564	74 265
Total before depreciation	-11 884	-12 836	-1 093
Depreciation	699	853	697
Total after depreciation	-12 583	-13 689	-1 790
Income from interest	299	337	262
Net interest income	4 307	-67	-1 187
Total	-7 977	-13 419	-2 715
Adjustment for externally financed equipment		16	
Total	-7 977	-13 403	-2 715

Commissions	2004	2003	2002
-------------	------	------	------

Operating income			
Central government allocation	0	0	53
Income from commissions, fees and other remuneration	104 372	101 621	81 825
Grants	0	0	14 689
Total	104 372	101 621	96 567

Operating expenses			
Running costs	51 276	35 641	36 231
Personnel costs	57 063	52 987	55 999
Total	108 339	88 628	92 230
Total before depreciation	-3 967	12 993	4 337
Depreciation	3 723	10 165	4 750
Total after depreciation	-7 690	2 828	-413
Income from interest	631	2 055	2 306
Net interest income	-3 318	-355	714
Total	-10 377	4 528	2 607
Adjustment for externally financed equipment	10	6 135	1 300
Total	-10 367	10 663	3 907

Friend not foe

Technology – nothing to be scared of
Technolution Pictures in Alexandria

The architect Peter Broberg's acclaimed Technolution pictures were recently put on display in the new library in Alexandria, Egypt, during the 'Global Environmental Youth Convention'. The Convention was arranged by the Institute of International Environmental Science at Lund University, in collaboration with the Centre for Technolution at LTH. Over 500 young people aged between fifteen and eighteen, from countries throughout the world, followed a web-based course, the culmination of which was the gathering in Alexandria. Ten young people from Lund attended the Convention.

"I've been working together with the Institute of International Environmental Science for one and a half years now. Among other things I produced the pictorial material for their work in China. For the exhibition in Alexandria I took fifty older pictures and added eight new ones – the Alexandria Octet – which stress even more emphatically that technology can provide the solutions to our environmental problems. Technology is nothing to be scared of", explains Peter Broberg.

Broberg had intended to travel to the Convention himself, to talk about his views on humanity and technology, on humanism and cultural development, but he was unable to travel for health reasons. Peter Broberg is Professor of Human Technology at LTH and together with Professor Skotte Mårtensson he has produced a series of approximately 100 pictures which illustrate humanity's evolution, and show how humans have shaped technology and technology has shaped human life. A film was also made, with the aim of presenting the concept to the Convention in Alexandria; a student was engaged to present the film and observe the reactions it aroused in the young people attending.

Over a number of years, Professor Broberg has worked with upper secondary colleges in the Nordic countries – for instance, in an images project funded by the Nordic Council for Cultural Affairs he has provided competence development for 500 teachers, and through them reached thousands of school pupils. The project has now received additional funding from the Sparbankstiftelsen Skåne foundation, to the tune of SEK 700,000 spread over two years, to enable the work on pictures and technology to be extended to ten comprehensive schools in the Malmö/Lund region.

The Board

Term of Office
1 January 2003 – 31 December 2004



Anders Narvinger
Chairman
Managing Director of the
Association of Swedish
Engineering Industries



Gunilla Jönson
Dean, Professor



Klas Malmqvist
Vice Chancellor,
Professor



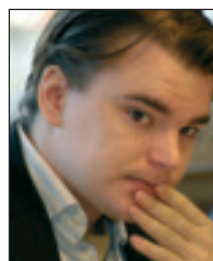
Tord Wingren
Managing Director of
Ericsson Mobile
Platforms



Anna Persson



Hedvig Hjortsberg



Björn Henningsson

Student Representatives



Stina Gestrelus
Director of Research,
Biora AB



Monica Almqvist
Research Assistant



Teresa Hankala-Janiec
Adjunct university lecturer
(SACO, the Swedish Con-
federation of Professional
Associations)



Gustav Ekberg,
Senior instrument maker
(TCO, the Swedish
Confederation of Profes-
sional Employees)



Christer Nilsson,
Research engineer
(TCO, the Swedish Con-
federation of Professional
Employees)

Representatives of Staff Organisations



Karin Brundell-Frej
University Lecturer



Guido Zacchi
Professor



Hans Hansson
Professor



Karl Åström
Professor



Per Göran Nilsson,
Manager, Administration
Office



Christina Holm,
Secretary to the Board

Key facts and figures

Undergraduate studies

Revenues/Results	Unit	2004	2003	2002
Government allocations (GU)	MSKR	410	399	375
Full-time equivalents*	FTE	5 761	5 642	5 160
Annual performance equivalents	APE	5 009	4 673	4 639
APE/FTE	%	87%	83%	90%
Government	SEKm/FTE	71	71	73
MScs and architecture degrees required by Govt 01-04	Number	2 510	2 510	2 510
MScs and architecture degrees actual result 01-04	Number	2 595	1 862	1 222
Actual result/required by government	%	103%	74%	49%
Other external income	SEKm	17	12	16
Other external income / Government allocation	%	4	3	4
Other external income per FTE	KSEK/FTE	3	2	3
Total external income excluding commissions	SEKm	427	411	391
Total external income / FTE	KSEK	74	73	76
Lecturers	Number	208	198	198
FTE per lecturer	FTE/Lect	28	29	26
Teaching assistants	Number	100	109	117
FTE per teaching assistant	FTE/TA	58	52	44

* FTE based on FTE data from LTH's departments.

Commission

	Unit	2004	2003	2002
Teaching	SEKm	8	13	13
Commissioned teaching/Govt allocation	%	2	3	4
Research and postgraduate education (R&PG)	SEKm	97	89	83
Commissioned R&PG/Grant-financed R&PG	%	40	37	35

Key facts and figures, cont.
Research and postgraduate education

	Unit	2004	2003	2002
Govt appropriation	SEKm	245	239	236
Govt R&PG appropriation /Govt UG allocation	%	60	60	63
Science Research Council	SEKm	78	86	68
FORMAS	SEKm	25	28	23
Foundations for strategic research	SEKm	46	41	37
EU	SEKm	58	41	41
Swedish Energy Agency	SEKm	69	71	66
VINNOVA Swedish Agency for Innovation Systems	SEKm	50	77	61
Total	SEKm	326	344	296
Total ext. financing R&PG (excl. commissions)	%	133	144	125
Other ext. financing	SEKm	115	178	188
Other ext. financing R&PG/ Govt R&PG per doctorate awarded	%	47	74	80
Total ext. financing R&PG (excl. Commissions)	SEKm	686	761	720
Total ext. financing per doctorate awarded	SEKm	5,4	6,7	7,7
Postgraduate FTEs	Number	503	510	603
Licentiate degree	Number	63	91	77
Govt R&PGT approp./Lic. degree	SEKm	3,9	2,6	3,1
Degrees/Postgraduate students	%	13	18	13
Doctorates	Number	127	114	94
Govt R&PG approp./Doctorates	SEKm	1,9	2,1	2,5
Degrees/Postgraduate students	%	25	22	16
Professors	Number	180	171	164
Govt R&PG approp. / professors	SEKm	1,4	1,4	1,4
R&PG grants/Professors	SEKm	2,5	3,1	3,0

Academic staff

	Unit	2004	2003	2002
Teaching staff	Number	434	466	450
External income (UG) per teacher	SEKm	1,0	0,9	0,9
External income (R&PG) per teacher	SEKm	1,6	1,6	1,6
External income (UG+R&PG) per teacher (excl. Commissions)	SEKm	2,6	2,5	2,5
FTE/teacher	Number	13	12	12
Licentiate degree/teacher	Number	0,15	0,20	0,17
Doctorate/teacher	Number	0,29	0,24	0,21

LTH 04.

LTH Administration Office • PO Box 118 • SE-221 00 Lund, Sweden • tel + 46- 22 72 00 • info@kansli.lth.se

Visiting address • Student Union Building (Kårhuset) • John Ericssons väg 3 • Lund

www.lth.se



LUND
UNIVERSITY