Annual Report 2022

Department of Information Technology

Adopted by the department board on 23 March 2023
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1 Introduction

The Department of Information Technology conducts education, research and collaboration in the fields of computer science and information technology in the broad sense. Activities are run in five divisions: Scientific Computing, Computing Science, Computer Systems, Systems and Control, and V13. In addition to conducting research, education and collaboration within the various divisions, the department also hosted the Swedish National Infrastructure for Computing (SNIC), which until the end of 2022 coordinated national resources to make high-performance computing systems and storage capacity available to Swedish researchers from local centres at six Swedish universities. In 2022 SNIC was phased out to become the National Academic Infrastructure for Supercomputing in Sweden (NAISS), hosted by Linköping University. In addition, the department hosts what in 2022 was Uppsala’s local SNIC centre, Uppsala Multidisciplinary Center for Advanced Computational Science (UPPMAX), which will now be a node in NAISS. As UPPMAX has its own remit and annual report, its activities are not described further here.

The beginning of 2022, like 2020 and 2021, was characterised by the coronavirus pandemic and its impact on our activities. Soon, however, we were able to switch from working from home back to working on site. As the department had moved to new premises in building 10 at the Ångström Laboratory in January, that was where we returned to, a move that was generally perceived as being very positive.

We are still experiencing the problems of a rapidly growing educational task, with faculty funding for research not growing equally fast. This perceived imbalance causes problems in terms of the conditions we can offer both existing staff and those we need to recruit to fulfil our educational task. With high demand for people with PhDs in our field, we need to be able to provide more time for research in the positions we offer. The department has raised this issue with the faculty management on several occasions, and we are still hoping for a speedy solution.

Now that the pandemic appears to be over and we have been able to return to working on site in attractive new premises, we look forward to continuing our successful activities as described in the following sections of the Annual Report. This report is part of a systematic approach to objectives, strategies and follow-up regarding the work of the Department of Information Technology. As you will see by reading it, we have a lot of great activities going on that we can be pleased and proud of, and above all we have very talented staff to carry them all out!
2 Education at first-cycle and second-cycle level

2.1 Follow-up on 2022 Action Plan

During 2022 Tobias Wrigstad was the department’s Head of Education. The department’s educational activities have been managed by a group comprised of directors of studies, which meets on a weekly basis and is chaired by the head of education. Teaching at each division has been led by a separate director of studies. At the start of the year, the directors of studies in the group were: Jarmo Rantakokko, responsible for courses at the Division of Scientific Computing; Mohamed Faouzi Atig, responsible for courses at the Division of Computer Systems; Tjark Weber, responsible for courses at the Division of Computing Science; Hans Rosth, responsible for courses at the Division of Systems and Control; and Filip Malmberg, responsible for courses at the Division of Vi3. In addition to the above, different directors of studies have different roles: Jarmo Rantakokko has special responsibility for teaching development (e.g. teaching courses for teaching assistants and lunch seminars); Tjark Weber for quality in education (e.g. course reports and matters in the disciplinary board); Mohamed Faouzi Atig for recruitment (processes and presents all employment matters in the management team) and Filip Malmberg for staffing (distribution of teaching assistants and doctoral students on courses) and thesis projects. In addition to directors of studies, the team includes office staff, study counsellors, schedulers and subject coordinators.

In November 2022 a full-time lecturer, Bedour Alshaigy, was added to the director of studies group to coordinate the growing number of thesis projects supervised and reviewed in the Department of Information Technology. Hiring a person for this function was part of the operational plan.

In 2022 a group led by the head of education worked on the decision of whether to proceed with the centralisation of finances for first- and second-cycle education. In addition to the head of education, who was the convener, teacher representatives in the form of Matteo Magnani (CSD), David Black-Schaffer (DoCS) and Katharina Kormann (TDB) took part in this group. The doctoral student representative was Amanda Stjerna. The student representative was Fanny Hermansson. With the support of this group, the head of education drew up a proposal for how finances for first- and second-cycle education could be centralised which was discussed by the director of studies group, the management team, the board of directors and the various divisions. The board of directors decided to centralise finances for first- and second-cycle education as of 1 January 2023. As a result, minor changes were made to the allocation model for finances for first- and second-cycle education so that the allocation for small courses grew slightly.

The director of studies group held a retreat in June at the Steningeviks kursgård conference facility to discuss, among other things, the above-mentioned centralisation of finances for first- and second-cycle education. There was an emphasis on the differences between the various divisions in terms of how money is used, how courses are staffed, etc., with the aim of gradually introducing common and fair procedures for all divisions. Detecting differences between divisions is an ongoing task that will continue until at least the end of 2023.
In the spring, the department took part in a study on module sizes that took up a lot of time for both the management of the organisation for finances for first- and second-cycle education and individual teachers. The impact of this study and the faculty board’s subsequent decision is unclear at the time of writing.

The department’s understaffing has led to problems in staffing the subject coordinator role, with there being a total of five different subject coordinators since 2020. This leads to problems for the department in making its voice heard at faculty level and difficulties in coordinating courses given by the department in programmes run by other departments, etc. At the beginning of the year, the head of education served temporarily as subject coordinator and in August, the role was taken over by Emanuel Rubensson.

2.2 Follow-up on objectives

2.2.1 Objective 1: Our Education Shall Be Further Developed Based on Recognised Excellence and Demand

In 2022 our objective was to investigate the extent to which students wish to engage in a mix of in-person and digital tuition. The survey has not yet been carried out.

2.2.2 Objective 2: Our Education Shall Be Linked to Research

This objective is difficult to accomplish within the scope of the department’s educational task with the current allocation of research funding from the faculty. In 2022 we continued to try to say ‘no’ to as much as possible in order to maintain quality and the link between teaching and research. We have also continued to put pressure on the faculty to address this problem.

2.2.3 Objective 3: Our Education Shall be Linked to Working Life

To better link software engineering education to established business practices, an associate professor was recruited to start collaborating with companies that can help us provide industry-relevant and modern software engineering education through adjunct teachers. Due to a delay in the recruitment process, the objective of “at least two of our software engineering courses are partly taught by professional adjunct teachers in 2022–23” will not be achieved until 2023–2024 at the earliest.

The plan to commission lecturers to increase the number of lectures by visiting lecturers was postponed until 2023, as it was felt that teaching staff were too exhausted to react positively to further demands from above. For the time being, there are representatives from the business community on all of ‘our’ programme boards.

2.2.4 Objective 4: We Shall Ensure Pedagogical Development

In 2022 we restarted the pedagogical lunch seminar, updated and held courses for teaching assistants and explored the idea of adding a factor for allocating resources to courses/teachers that rewards teaching in line with what is decided on centrally. The consequence of the latter is a timetable for maintaining and revising the range of courses offered that is scheduled to go live in 2023.
2.2.5 Objective 5: We Shall Offer Lifelong Learning

We have continued to provide a small number of LLL courses and currently have no plans to expand this range due to a shortage of staff.

3 Research

Composition of the PAP group of research-programme responsible professors (programansvariga professorer) in 2022:

- Mats Daniels, Computing Education Research (datavetenskapens didaktik)
- Pierre Flener, Computing Science (datalogi)
- Bengt Jonsson (until 2022-10-03) and Parosh Abdulla (from 2022-10-04), Computer Systems (datorteknik)
- Gunilla Kreiss, Numerical Analysis (numerisk analys)
- Elisabeth Larsson, Computational Science (tillämpad beräkningsvetenskap)
- Alexander Medvedev, Automatic Control (reglerteknik)
- Thomas Schön, Artificial Intelligence (artificiell intelligens)
- Carolina Wahlby, Image Analysis and Human-Computer Interaction (bildanalys och människa-datorinteraktion)

Pierre Flener was Head of Research (forskningsprefekt = FP). David Black-Schaffer is the representative of the IT department on the Advisory Committee for Research (forskningsberedningen = FB) of the TekNat faculty. The PAP group met 9 times during 2022 and took the following important decisions, most advocated in our Operational Plan (verksamhetsplan = VP) for 2022 and others were ad hoc as opportunities arose:

3.1 Goals Related to Research

Five faculty-level goals are described (see TEKNAT 2020/31 for details).

3.1.1 Goal 1: Our Research Shall Be Further Developed Based on Recognised Excellence

We continued to work proactively on encouraging submission to relevant external calls. This included our internal process on soliciting, reviewing, and improving Wallenberg Academy Fellow applications for the TekNat selection (we nominated two, and one of them is nominated by UU), our organisation of VR grant writing clubs in each division, and our department-level (PAP) discussions to identify and support Wallenberg Scholar applications for the TekNat selection in 2023. We encouraged faculty members to submit ERC applications on all seniority levels.

On 10 May 2022, the Beijer Laboratory in Artificial Intelligence was inaugurated at the Department, with Professor Thomas Schön receiving funding (14 Msek) from the Kjell and Märta Beijer Foundation towards endowing two assistant professorships.
3.1.2 Goal 2: Broad Research Initiatives Shall Be Developed Proactively

In 2016, the department selected cybersecurity as a future focus area, leading to the creation of a cybersecurity research arena to foster research activities in the field. This was consolidated in 2020, when cybersecurity was listed as one out of three strategic research areas at the Dept. of IT. Strategic funds at the department have been allocated to

- a start-up package from 2020 to 2024 for André Teixeira;
- an adjunct professor with strong industry ties 2022-2023;
- a PhD school was launched in 2022, bringing together our 8 existing doctoral students in cybersecurity with 2 newly funded ones.

This effort is led by Professor Christian Rohner and Associate Professor André Teixeira. It is in response to increased interest from students, industry, and society, as well as partly due to a significant increase in obtained external funding. The department now has more than 11 ongoing research projects in cybersecurity, adding up to more than 80 MSEK, including several substantial SSF projects, VR projects in Societal Security, as well as Vinnova, SFO/eSSENCE, and MSB (Myndigheten för samhällsskydd och beredskap, aka the contingency agency) supported projects and personal grants (e.g., SSF Future Research Leader) related to cybersecurity. More than 9 PhD students are already working with cybersecurity and there were 6 cybersecurity-related BSc/MSc theses in the area during 2022. Besides 4 recently created cybersecurity courses, one PhD-level course in Security and Privacy was taught. There are 4 ongoing industry collaborations that are related to the subject.

Furthermore, Rohner and Teixeira led the Department’s effort to make cybersecurity a potential profile area for VR (the Swedish Research council) and a strength area of TekNat within UU.

We decided in May 2022 to bootstrap a similar activity in sustainability. Upon a call for bids, we awarded Professor Mike Hazas the coordination of this effort over the first 12 months.

Goal 1 directly supports Goal 2 by providing department-level coordination to identify and support shared cybersecurity and sustainability efforts that may be appropriate for large-scale grants.

3.1.3 Goal 3: Research Funding Shall Be Broadened

See Goal 2: After successfully achieving (in 2020) two of our three departmental objectives, namely establishing research programmes in artificial intelligence and in computing education research, we have diversified our research into cybersecurity, our third objective, and sustainability, a new objective, by bootstrapping them with strategic funding of the department.

3.1.4 Goal 4: Access to Advanced Research Infrastructure Shall Be Ensured

The Department remained vigilant about applying to calls on research infrastructure and data storage, so that our needs can be satisfied.
During 2022, the Department has been actively involved in supporting the transition from the Swedish National Infrastructure for Computing (SNIC), hosted by the department, to the National Academic Infrastructure for Supercomputing in Sweden (NAISS), hosted by Linköping University. The Department also hosts UPPMAX, UU’s local node in the national infrastructure as well as UU’s local provider of high-performance computing and large-scale resources. During the year the Department, in close contact with the Faculty and University, has laid strategic plans to ensure continued availability of resources for UU researchers and teachers.

3.1.5 Goal 5: We Shall Adapt Research Support to Current Needs

The Department has developed in 2021 a career support programme for our tenure-track assistant professors (BUL), including grant clubs. We held two meetings with presentations in 2022:

- 16 December: Communication of Research, by Åsa Cajander.

Indicators for 2022:

- Number of our assistant professors participating in the departmental / TekNat / UU career support programmes: 13 / 3 / 4 of our 15 (of 16) BULs that are already at the Department.
- Number of submitted / accepted / pending grant applications by our assistant professors: 22 / 5 / 2 by one of our 16 BULs as PI, and 8 / 1 / 2 as co-PI.

3.2 Statistics of 2022

Distribution of common funds (in thousands of SEK) for strategic activities:

<table>
<thead>
<tr>
<th>Category</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>UL: Cybersecurity</td>
<td>500 tkr</td>
</tr>
<tr>
<td>Adjunct Professor: Cybersecurity</td>
<td>350 tkr</td>
</tr>
<tr>
<td>PhD School: Cybersecurity</td>
<td>660 tkr</td>
</tr>
<tr>
<td>Sustainability arena bootstrap</td>
<td>40 tkr</td>
</tr>
<tr>
<td>Other arenas</td>
<td>200 tkr</td>
</tr>
<tr>
<td>BUL: Social Robotics</td>
<td>270 tkr</td>
</tr>
<tr>
<td>UL: Software Engineering</td>
<td>500 tkr</td>
</tr>
<tr>
<td>Maths + IT Summer Camp</td>
<td>25 tkr</td>
</tr>
<tr>
<td>5 postdocs in IT for a sustainable and secure society</td>
<td>2,581 tkr</td>
</tr>
<tr>
<td><strong>Total in 2022</strong></td>
<td><strong>5,126 tkr</strong></td>
</tr>
</tbody>
</table>
The total is a lot higher than the 1,862 tkr distributed in 2021.

The remaining strategic funding was distributed to the divisions according to a performance-based and FFF-based key prescribed by regulations of the IT department:

<table>
<thead>
<tr>
<th>Division</th>
<th>%</th>
<th>Amounts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Systems (DoCS)</td>
<td>26.2%</td>
<td>2,050 tkr</td>
</tr>
<tr>
<td>Computing Science (CSD)</td>
<td>17.8%</td>
<td>1,393 tkr</td>
</tr>
<tr>
<td>Scientific Computing (TDB)</td>
<td>18.8%</td>
<td>1,481 tkr</td>
</tr>
<tr>
<td>Systems and Control (SysCon)</td>
<td>15.9%</td>
<td>1,245 tkr</td>
</tr>
<tr>
<td>Visual Information and Interaction (Vi3)</td>
<td>21.3%</td>
<td>1,667 tkr</td>
</tr>
<tr>
<td><strong>Total in 2022</strong></td>
<td><strong>100.00%</strong></td>
<td><strong>7,836 tkr</strong></td>
</tr>
</tbody>
</table>

The total is higher than the 6,030 tkr distributed in 2021, and the numbers for the various divisions went slightly up or down, largely due to different numbers of PhD defences in 2021 compared to 2020.

The following table summarises the research funding applications made during 2022:

<table>
<thead>
<tr>
<th>Amounts</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Amounts</strong></td>
<td><strong>Applications</strong></td>
</tr>
<tr>
<td><strong>Sought amounts (tkr)</strong></td>
<td><strong>Granted amounts (tkr)</strong></td>
</tr>
<tr>
<td>VR</td>
<td>79,236</td>
</tr>
<tr>
<td>VR, IT co-apps</td>
<td>13,595</td>
</tr>
<tr>
<td><strong>Sum of others</strong></td>
<td><strong>163,159</strong></td>
</tr>
<tr>
<td>whereof EU</td>
<td>44,964</td>
</tr>
<tr>
<td>whereof Formas</td>
<td>9,580</td>
</tr>
<tr>
<td>whereof SSF</td>
<td>32,800</td>
</tr>
<tr>
<td>whereof Vinnova</td>
<td>9,707</td>
</tr>
<tr>
<td><strong>Sum 2022</strong></td>
<td><strong>255,990</strong></td>
</tr>
<tr>
<td>Decision in 2023 *</td>
<td>127,986</td>
</tr>
<tr>
<td><strong>Sum 2021</strong></td>
<td><strong>461,530</strong></td>
</tr>
</tbody>
</table>

* The acceptance rates in parentheses are for only the applications that were already notified by the funding agency.
The applications of 2022 in the following table await notification during 2023:

<table>
<thead>
<tr>
<th>Funding agency</th>
<th>Sought amounts (tkr)</th>
<th>Submitted applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forte</td>
<td>6,700</td>
<td>4</td>
</tr>
<tr>
<td>SSF</td>
<td>32,800</td>
<td>3</td>
</tr>
<tr>
<td>Vinnova</td>
<td>9,707</td>
<td>7</td>
</tr>
<tr>
<td>EU</td>
<td>44,961</td>
<td>13</td>
</tr>
<tr>
<td>Wallenberg KAW</td>
<td>33,818</td>
<td>11</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td><strong>127,986</strong></td>
<td><strong>38</strong></td>
</tr>
</tbody>
</table>

Average currency exchange rates from January 2022 to December 2022 (see https://www.riksbank.se/sv/statistik/sok-rantor--valutakurser/valutakurser-till-deklarationen):

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1 EUR</strong></td>
<td><strong>10.6317</strong></td>
</tr>
<tr>
<td><strong>1 USD</strong></td>
<td><strong>10.1245</strong></td>
</tr>
</tbody>
</table>
4 Third-cycle programmes and courses

4.1 FUS, FUA and FUAP group

The Director of PhD Studies (FUS) function can be reached at director-phd-studies@it.uu.se and during the year was staffed by Ingela Nyström (allocated 10 percent).

The Administrators for PhD Studies (FUA) function can be reached at administration-phd-studies@it.uu.se. The FUA group was reorganised in view of Elisabeth Lindqvist’s retirement in November 2022. Tasks have been adjusted and reallocated to other individuals and functions. Anette Hannerström from the student office has been involved in issues mainly concerning course registration and grade reporting, and Sara Bladby from HR has worked on issues concerning employment contract extensions, doctoral student salaries and ISPs. Together with Human Resources Coordinator Gunilla Berger and Head of the Administrative Support Unit Jakob Piehl, the group has dealt with other issues such as the formalities surrounding doctoral thesis defences and licentiate seminars. Yasmin Sjöholm has also continued to assist in specific tasks.

The professors in charge of PhD studies (FUAP) for our eleven PhD study areas in 2022 were

- **Scientific Computing:** Maya Neytcheva
- **Scientific Computing: Numerical Analysis:** Ken Mattsson
- **Computer Science:** Stefanos Kaxiras and Di Yuan
- **Computer Science: Database Technology:** Di Yuan
- **Computer Science: Computing Education Research:** Mats Daniels
- **Computer Science: Computer Communication:** Thiemo Voigt up until 5 December 2022, Stefanos Kaxiras from 6 December 2022.
- **Computer Science: Embedded Systems:** Wang Yi
- **Computer Science: Human-Computer Interaction:** Anders Arweström Jansson up until 31 August 2022, Mike Hazas from 1 September 2022.
- **Computerised Image Processing:** Ingela Nyström
- **Electrical Engineering: Automatic Control:** Alexander Medvedev
- **Electrical Engineering: Signal Processing:** David J.T. Sumpter up until 30 November 2022
  - **Machine Learning:** David J.T. Sumpter from 1 December 2022

It is worth noting that the PhD study area of Electrical Engineering: Signal Processing has had a freeze on admissions from 1 December 2022. Instead, new PhD students are being
admitted to the new PhD study area of Machine Learning, which better describes how the scientific content has developed over the years.

The roles of FUS, FUA and FUAP are described in ref. IT 2013/49 and include overseeing the annual update of individual study plans, acting as contacts, standardising the department’s procedures, assisting doctoral students and supervisors, maintaining websites and other tasks as assigned by the head of department.

The main source of information is the Department of Information Technology’s PhD Manual (https://mp.uu.se/c/perm/link?p=20962820) on the Staff Portal, in which information has been compiled that doctoral students and supervisors may need, spanning from recruitment and admission to doctoral thesis defences and completion.

4.2 Crucial ISP revision
The single biggest task for PhD studies during the year is to gather in doctoral students’ individual study plans (ISPs). This work involves doctoral students and supervisors, as well as FUAP, FUA and FUS, but also heads of department, heads of division and directors of studies. We request a revised version for all doctoral students, and for a number of years the deadline has been 15 September.

The ISP revision is a comprehensive exercise in two parts: one taking place internally in the department and the other externally in the faculty. Each doctoral student is required to submit a study plan at least once a year, and all ISPs in the department must be collated and comments on any unsubmitted ISPs presented in a report to the faculty for follow-up there.

This year, part of the work on gathering in ISPs has been to develop a working method for future years; with as many as around 120 active doctoral students to manage, it is important that the whole ISP process is efficient and easy to work with.

A discussion during the year in various forums has centred on the importance of the doctoral students’ study plans and of them being revised annually in order to follow up on and support the doctoral students’ progress. Since the introduction of ISPs and monitoring by means of annual revision, the throughput time has decreased; see statistics in chapter 4.4.

4.3 Fulfilment of the 2022 operational plan objectives
Four points were outlined as constituting an action plan for 2022. The following is a description of what has been done in each of these areas during the year.

4.3.1 Improve the process of recruiting doctoral students
The purpose of introducing a process for recruiting doctoral students at the end of 2021 was to ensure that our advertising regarding doctoral positions has a broad reach and that our recruitment is skills based. Before an advertisement is published, a search group drafts a knowledge profile and criteria for assessing the applicants for the doctoral position. These preparations provide the basis for the text of the advertisement, which must also take the equal opportunities perspective into account. The search group continues to be involved during two-step interviews and candidate ranking. At the start of
employment, the human resources generalist is involved in the induction of the doctoral student, ensuring they have the best possible start.

The department will evaluate the processing once a sufficient number of doctoral students have been recruited to each division to be analysed. Supervisors, doctoral students, human resources and heads of division will be given the opportunity to suggest improvements to the process and possible simplifications.

4.3.2 Clarify the planning of departmental duties

The department makes ongoing efforts to improve opportunities for doctoral students to plan their departmental duties; this includes directors of studies ensuring that the doctoral students know which courses they will be teaching as early as possible, i.e. when information on the number of applications is available. A further step is to include doctoral students in teaching teams that provide support before and during teaching.

The aim is to allow doctoral students to plan their time more effectively, so that they can focus on their research and participation in conferences during periods when they are not teaching.

4.3.3 Engage doctoral students in peer contexts

For some time, the department has recognised that doctoral students’ willingness to engage in board work and various working groups at the department has decreased. Clarifying the importance and benefits of participating in such contexts and ensuring that more doctoral students become active is an educational challenge; otherwise there is a risk of over-utilising the few doctoral students who show an interest.

We have worked to generate greater interest by making their engagement more worthwhile. A study is in progress regarding what is reasonable in terms of time compensation and employment contract extension as a doctoral student for duties in the department’s various working groups. Dialogue is mainly conducted with doctoral students and heads of division.

4.3.4 Encourage further professional development of supervisors

The department needs to emphasise further training for supervisors in addition to the compulsory supervisor training. It is on the FUAP group’s agenda to ensure that all PhD study areas have supervisory staff meetings at which experiences can be exchanged, e.g. prior to ISP revision. FUS regularly encourages FUAP to call supervisors to a meeting each semester on topics such as what to do if a doctoral student is making slow progress, and how to set clear milestones, maintain the quality of theses or set requirements for writing.

4.4 Statistics for 2022

Depending on the system used, the number of doctoral students in the department varies. GLIS (Uppsala University’s management information and decision support system) yields 123 doctoral students, while the Ladok student records system yields 140 doctoral students (including new admissions and those defending their thesis/licentiates during the year). The difference is assumed to lie in how active doctoral students are counted. Ladok shows everyone who is registered for the department’s doctoral programmes, but they do
not necessarily have to be active. FUS and the FUA group have discussed the term active and define those who have not submitted an ISP for two years as inactive.

In 2022 24 new doctoral students were admitted. They can be broken down into men and women\(^1\) and by subject as shown in Table 1.

Table 1. Gender breakdown for newly admitted men and women in the department’s PhD study areas.

<table>
<thead>
<tr>
<th>PhD study area</th>
<th>Men</th>
<th>Women</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientific Computing</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Scientific Computing with a specialisation in Numerical Analysis</td>
<td>3</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Computer Science</td>
<td>7</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Computer Science with a specialisation in Database Technology</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Computer Science with a specialisation in Computing Education Research</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Computer Science with a specialisation in Computer Communication</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Computer Science with a specialisation in Embedded Systems</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Computer Science with a specialisation in Human-Computer Interaction</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Electrical Engineering with a specialisation in Automatic Control</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Electrical Engineering with a specialisation in Signal Processing/ Machine Learning</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>19</td>
<td>5</td>
<td>24</td>
</tr>
</tbody>
</table>

A total of 22 degrees were awarded during the year. Of these, 17 were PhDs and five were licentiate degrees. This is about the same number of PhDs as last year (19), but represents an increase in licentiate degrees (1).

The net study time for PhDs remains at a good level, while that for licentiate degrees is slightly longer than the two years it should be. One way of interpreting this is that some of the doctoral students who have not completed their PhDs have nevertheless ended their time as a doctoral student with a licentiate degree, which is a \textit{de facto} win-win for all parties. We can also note that the net study time is shorter for 2022 compared to what it has been over a five-year period. The fact that the gross study time is longer than the net study time, which applies to both PhDs and licentiate degrees, can be explained by the departmental duties of doctoral students constituting up to 20 percent of gross study time,

\(^1\) It has been discussed whether we should report on more genders than the legal ones, but we have concluded that investigating this would be problematic, so we are still reporting according to the university’s standards.
but also by, for example, parental leave and/or sick leave. The last five years are presented in Table 2.

Table 2. Gross and net study time for licentiate degrees and PhDs over the last five years.

<table>
<thead>
<tr>
<th>Year</th>
<th>Licentiate</th>
<th></th>
<th>PhD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Gross study time</td>
<td>Net study time</td>
<td>Gross study time</td>
</tr>
<tr>
<td>2022</td>
<td>6.30</td>
<td>3.45</td>
<td>6.03</td>
</tr>
<tr>
<td>2021</td>
<td>5.00</td>
<td>3.76</td>
<td>6.18</td>
</tr>
<tr>
<td>2020</td>
<td>5.93</td>
<td>3.35</td>
<td>6.75</td>
</tr>
<tr>
<td>2019</td>
<td>3.63</td>
<td>2.72</td>
<td>6.25</td>
</tr>
<tr>
<td>2018</td>
<td>4.42</td>
<td>3.08</td>
<td>6.68</td>
</tr>
</tbody>
</table>
5 Collaboration and outreach

Collaboration between the department and society at large is conducted with a high level of commitment through a range of activities largely determined on the initiative of our staff through bottom-up management. Since 2020 the department has had a collaboration coordinator to map and coordinate the department’s activities in this area. Ida-Maria Sintorn has been in this role since it was established.

The task entails compiling and coordinating activities and arranging and encouraging contact. In addition, a significant part of the work consists of supporting project managers in the start-up phase of new business-related projects and facilitating contract drafting. This is done by discussing and raising awareness of possible political, ethical and financial situations/problems that may arise, as well as the practical commitments specified in the contract regarding IP, data management, publication and use of logos and names, etc.

Examples of the department’s collaboration and outreach activities during 2022 are presented below, divided into three areas: schools and the general public, industry and society, and education.

5.1 Collaboration with schools and the public

Many of our department’s groups and staff disseminate information about their research, teaching and activities via social media and platforms such as websites, Facebook, YouTube, blogs and Twitter. Some examples of activities carried out with and by the department’s staff aimed at schools and/or the public in 2022 are given below.

- During the year, Swedish national media appearances included Professor Thomas Schön in a TV report (SVT, Vetenskapens värld) on AI and AlphaCode in particular, and Professor Anders Arweström Jansson in the radio programme Filosofiska rumnet (SR) talking about how mood and hunger control decisions.
- An interview with Professor Carolina Wählby, Associate Professor Ida-Maria Sintorn and Associate Professor Salman Toor about the Hierarchical Analysis of Spatial and Temporal Data project was published in the magazine Framtidens forskning.
- Professor Åsa Cajander, Professor Emeritus Bengt Sandblad and Dr Magdalena Stadin’s knowledge summary Artificiell intelligens, robotisering och arbetsmiljön (Artificial intelligence, robotisation and the work environment) commissioned by the Swedish Agency for Work Environment Expertise was released, and Åsa was interviewed in the work environment magazine Arbetsmiljö.
- Professor David Sumpter wrote an op-ed for UK newspaper The Guardian in which he outlined various equations that have paved the way for breakthroughs in the IT sector, perhaps the most prominent example being Google (PageRank). ““Equations built giants like Google. Who’ll find the next billion-dollar bit of maths?”
- Three of the department’s professors, Ginevra Castellano, Åsa Cajander and Carolina Wählby, were each interviewed in an episode of the faculty’s popular
science series *Upptalk weekly*.  
https://www.youtube.com/watch?v=rfP9vROE8Jw  
https://www.youtube.com/watch?v=cNx99XGw4U&t=37s  
https://www.youtube.com/watch?v=E580ZeceX3s

- Associate Professor Ida-Maria Sintorn was part of UU Innovation’s panel discussion on inclusive innovation in the open seminar *Vem formar framtiden?* (Who is shaping the future?), https://www.youtube.com/watch?v=55Y-8FVcQA
- Professor Thomas Schön gave an inspirational lecture at the final of the Swedish championships for young scientists, which brings together research-minded and innovative upper-secondary students from all over Sweden.
- In the PhD student course “Using maths and computer science to do social good” (2021–2022), doctoral students Fredrik Gustafsson, Daniel Gedon and Erik Hallberg carried out a project that resulted in popular science YouTube videos (one Swedish https://www.youtube.com/watch?v=WKsxZ5fGvF0 and one English https://www.youtube.com/watch?v=5G4cmSh4s-4 with a total of over 800 views) explaining how machine learning can help doctors save lives. The doctoral students also created three interactive exercises related to the video aimed at secondary school students to explain underlying mathematical concepts: https://educaora.com/@MachineLearningDoc.
- In the same course, other doctoral students carried out projects using mathematics and statistics to show the problems and effects of the new immigration law introduced in 2021, as well as how gender identity investigations and the healthcare queue regarding these (do not) work and how planned restructuring will affect the waiting time. Blogs are available to read at https://socialgood.it.uu.se/
- In Professor Ginevra Castellano’s research project on human-robot interaction, participants visited and conducted studies regarding trust in robots at Kvarngärdesskolan and Uppsala International School.
- The new Ångström Explanatorium exhibition with interactive displays opened in 2022. The exhibition is visited by a large number of school classes and the public every year. The Department of Information Technology’s contribution is a Turing machine proposed and designed by Senior Lecturer Lars-Henrik Eriksson.
- The official inauguration ceremony of the new Ångström building was followed by a multidisciplinary week, each day covering a different science and technology topic, which was open to the public. Researchers from the Department of Information Technology presented their research in the field of AI/data-driven life science both during the official opening ceremony and during the subsequent week of themed days.

5.2 Collaboration with industry and society

A way to directly collaborate and interact with industry is through adjunct staff, visiting researchers and industry-based doctoral students. In 2022 the department had two adjunct/visiting researchers from Ericsson and one from Stora Enso, as well as five active industry-based doctoral students.
Many of the research projects conducted by the department’s researchers take place in cooperation with the business community, public authorities and social institutions. Companies and institutions involved in the department’s research projects include: Assa Abloy, Intel Sweden, Oracle, Huawei Sweden, Källkritikbyrå, Astra Zeneca, the Swedish Transport Administration, the Swedish Maritime Administration, LFV (the Swedish Civil Aviation Administration), Astrego, Navinci, Region Dalarna, Ingrid Cloud, ABB, Ericsson Research, IoTbridge, Wittra Sweden, Scania, Microsoft.

The department’s researchers are regularly invited to give presentations at companies, public authorities and more industry-oriented events. As two examples, Professor Thomas Schön gave presentations at RISE (Research Institutes of Sweden), the Swedish Medical Products Agency, Ericsson, and at a meeting for heads of government agencies in 2022, and Professor Carolina Wählby presented her research at the Swedish biotech company Navinci. Similarly but in reverse, companies are also invited to the department for seminars, workshops and discussions on collaboration opportunities and common research interests. For example, last year Unibap, a company operating in AI and digitalisation, gave a presentation in one of the department’s seminar series, a group from Ericsson Networks was invited to a workshop at the department with presentations and discussions on opportunities for collaboration, and a virtual (due to COVID-19) visit to Sandvik Coromant, a company operating in the metal cutting industry, was organised to look into opportunities for collaboration. Discussions on cybersecurity also took place with the faculty’s strategic partners Hitachi and Volvo Cars.

In 2022 the department gave a lifelong learning (LLL) course, Introduction to Process Control.

Professor Thomas Schön received an unconditional research grant from Mitsubishi Electric Research Labs (MERL), Cambridge, MA, USA during the year.

5.3 Collaboration on education

The Department of Information Technology has strong links to industry and society in all its educational programmes and also in the vast majority of courses. We endeavour to ensure links to the business community in all our courses, although it is most meaningful and easiest to accomplish in the more advanced courses.

- All programmes have engaged industry representatives for their programme boards, from companies such as Intel, Cytiva, RaySearch and ABB.
- The department offers project courses of varying size and focus each year. Most of the projects in these courses are proposed and implemented together with companies or social actors – both small local and large global ones. In 2022 ImInt, Antaros Medical, RaySearch Technologies, Uppsala University Hospital and Ericsson, among others, hosted projects for project courses.
- Visiting lecturers from industry are common in the department’s courses. Companies we have worked with in this way in 2022 include: TopTracer, Vironova AB, Coupa, Ericsson, Scania, Intel and ABB.
• Many of our thesis projects take place with and in collaboration with business community actors. These have included Vattenfall, Hitachi, Alleima, Cytiva, Etteplan during the year.
6 Systematic work environment management

6.1 The Work Environment Group and the Crisis and Crisis Support Group

6.1.1 Composition of the Work Environment Group in 2022
- Lina von Sydow, Head of Department
- Jakob Piehl, Administrative Manager
- Ulrika Andersson, human resources generalist (also fire safety representative)
- Anna-Lena Forsberg, human resources generalist
- Sara Bladby, human resources generalist (from 1 June 2022)
- Gunilla Berger, human resources coordinator (from 22 August 2022)
- Marina Nordholm, safety officer (until 31 December 2025)
- Liselott Dominicus van den Bussche, safety officer (until 31 December 2022)
- Student representative Nawwar Al Far

6.1.2 Work Environment Group meetings in 2022
- 4 February (Zoom), agenda:
  - Annual Report 2021
  - Move to building 10
  - COVID-19
- 20 June (in-person meeting), agenda:
  - Follow-up on the move to the new premises, especially regarding curtains, which are perhaps the most urgent issue.
  - Evacuation drill
  - Safety inspection
  - Training for leaders/managers on the organisational and social work environment
  - The work situation for PhD students
  - Lectures/discussions on stress
  - Induction of new employees
  - Deputy Head of Department Robin Strand attended this meeting instead of the head of department.
- 30 August (in-person meeting), agenda:
  - Building 10 (Cecilia Broman, more people take part in the item)
    - Curtains:
      - Thermal curtains
      - Glare protection blinds
      - Curtains next to the atrium
      - Curtains next to the corridors
    - Noise heard through the walls between certain rooms
    - Locks – possibility of ensuring doors do not lock while you are on site
    - Minor decisions taken, such as the purchase of whiteboards.
  - Follow-up on the meeting of 20 June (Robin)
  - Course in CPR (Ulrika)
o New policy at UU for the work environment and equal opportunities
https://regler.uu.se/digitalAssets/14/c_14377-l_3-k_policy-for-
arbetsmiljo-och-likavillkor-ufv-2021-1473.pdf (Lina)
• 8 November (in-person meeting), agenda:
  o Building 10 (Cecilia) – follow-up on the previous meeting, max. one hour.
  o Follow-up on safety inspection (HR)
  o Training for leaders/managers on the organisational and social work
    environment (HR)
  o Course in CPR (HR)
  o New policy at UU for the work environment and equal opportunities
    https://regler.uu.se/digitalAssets/14/c_14377-l_3-k_policy-for-
arbetsmiljo-och-likavillkor-ufv-2021-1473.pdf – any thoughts on how
    we should change our way of working on these issues? (Lina)
  o Operational plan 2023 – what should we include? Compare with OP2022
    https://www.it.uu.se/about_us/organization/documents/VP2022-IT-
    inst_eng-GB.pdf. (Lina)

6.1.3 Composition of the Crisis and Crisis Support Group in 2022
• Lina von Sydow, Head of Department
• Ulrika Andersson, human resources generalist (also fire safety representative)
• Liselott Dominicus van den Bussche, safety officer (until 31 December 2022)
• Student representative Lovisa Thorsander

The Crisis and Crisis Support Group met on 16 March to discuss possible hybrid threats
to Sweden due to the outbreak of war in Ukraine. Deputy Head of Department Robin
Strand attended this meeting instead of the head of department.

6.2 Activities during the year
At the beginning of the year, the situation regarding the coronavirus pandemic was still
tense, with most employees working from home. However, this soon subsided and we
were able to return to working on site. In January we moved from Polacksbacken to the
newly constructed building 10 at the Ångström Laboratory. Much of the work of the
Work Environment Group has since then centred on getting our new environment in order
and addressing the deficiencies that existed, and in some cases still exist, at the end of
2022.

The following activities have been implemented over the course of the year as part of our
routine work environment management.

• Safety inspection.
• Performance reviews for seniors in late spring.
• Senior group discussions for doctoral students in late spring and ISP
  (individual study plan) revision in late summer/autumn. (Performance
  reviews for doctoral students are divided into two parts: the first takes place
  in conjunction with ISP revision and the second in conjunction with the
  senior group’s follow-up meeting for doctoral students.)
• The mentoring programme has continued as usual.
• All new employees who do not speak Swedish have been encouraged to
  attend Swedish lessons.
• New material has been launched to ensure effective induction of all new staff. The work on reviewing the induction of new employees is part of the remedial work following the work environment survey that took place in spring 2019.

• During the year we received the evaluation report, with the results of the evaluation of 7 of our 11 doctoral programmes. The points we have continued to work on in accordance with the action plan adopted are:
  o New procedure for recruiting doctoral students (decided and initiated)
  o Review of the scope and range of doctoral courses
  o Better opportunity to plan departmental duties
  o Supervisor development through supervisory staff meetings and discussion forums, for example

• Subsidised wellness activities, wellness hours, massages and fruit baskets are once again being offered as usual.

• A review has been conducted of the current situation regarding leadership training for members of the department’s management team, the head of research, director of PhD studies and members of the director of studies group. As of 31 December 2022, 95 percent of the abovementioned have undergone some form of leadership training.

• A review has been conducted of the current situation regarding supervisor training for doctoral student supervisors. In order to be the main supervisor of a doctoral student, supervisor training must be completed. At least 78% of doctoral supervisors had undergone some form of supervisor training by the end of December 2022.

• An evacuation drill organised by campus management took place on 15 September.
7 Equal opportunities activities
This part includes a description of last year’s equal opportunities work, as well as a quantitative description of the current situation at the department.

7.1 Description of equal opportunities work

The Head of Department has carried out the activities for which they were responsible according to the plan, such as the salary revision, the monitoring of gender issues in the management team, ensuring that there are representatives of both sexes in most decision-making and preparatory bodies.

The Equal Opportunities Group worked well according to the continuous work described in the Operational Plan for equal opportunities for 2022. The items in the Operational Plan for 2022 were addressed, with a few exceptions and with several additions of things we did, as described in the sections below. The group also provided input on Uppsala University’s gender mainstreaming plan 2023-2025.

The Equal Opportunities officer has coordinated the work by the equal opportunities group described below, and continued to carry out activities to support gender mainstreaming at the Department, funded by Teknat and Uppsala University in collaboration with the Head of Department, Vice Head of Department and former Head of Research Gunilla Kreiss. The activities involve using gender equality indicators to monitor the gender distribution of research resources and funding at the Department of Information Technology and how they can be used in a long-term perspective to improve gender mainstreaming work at the Department. A report is under preparation. The Equal Opportunities Officer has also provided input on the new document on Goals and Strategies at the Department of Information Technology.

1) Enhance capacity of the equal opportunities group to work as change agents

We have organised a retreat of the equal opportunities group in September 2022 at Krusenberg Herrgård, where we drafted the verksamhetsplan for equal opportunities for 2023.

We have organized equal opportunities fikas in the first half of the year. These included: a presentation by the Equal Opportunities Officer Ginevra Castellano on the results of the gender mainstreaming project conducted at the Department of Information Technology on using gender equality indicators to monitor the gender distribution of research resources and funding at the department; a seminar by Malin Göteman, Associate Professor and Equal Opportunities Officer at the Department of Electrical Engineering, who spoke about a covid survey from an equal opportunities perspective they did at their department; and a presentation and discussion with Natalia Calvo Barajas about plans for a PhD course on “Social Consequences of Technology and Trustworthy AI” to be funded by the group. Equal opportunities fikas were replaced in fall 2022 with the PhD course (see Section 4 below), whose lectures were open to all staff.

We actively worked on measures on how to prevent harassment: we disseminated the video on harassment produced in collaboration with Head of Education Tobias Wrigstad in each division; we created a page on the department’s website including summary of processes to report harassment and link to the video above; we provided input to the Head of Department to include information on harassment in staff meetings; we discussed with the
Head of Education about organising a Training day for TAs on discrimination and harassment.

We proposed and discussed with the Head of Department a plan for using equal opportunities funding in a different way from the four existing calls for projects, for projects run by the equal opportunities group. The proposal was approved by the Department Board.

2) Support gender mainstreaming work at the Department

We continued to work in collaboration with the Head of Department, vice Head of Department and Head of Education on producing updated instructions for search groups which discuss and account for gender aspects, the aim being to increase representation of women at different career stages at the department.

We set up a scheme to support postdocs, researchers, adjunct lecturers, and assistant, associate and full professors returning from parental leave, regardless of gender, building on Teknat’s previous call.

We investigated the possibility to support funding of carers’ travel during conference attendance of staff on parental leave and to make available parking spaces for disabled to pregnant women on a temporary basis. Both do not appear to be possible, at present, due to University regulations.

We continued to carry out activities to support gender mainstreaming at the Department, funded by Teknat and Uppsala University in collaboration with the Head of Department, Vice Head of Department and former Head of Research Gunilla Kreiss.

3) Diversity aware education that creates a better learning environment for all

We continued to support the delivery of a lecture on equal opportunities in all BSc and MSc introductory courses at the IT Department. The lecture is delivered in the fall by Martin Holmberg and covers several topics, including social exclusion / inclusion, suppression techniques and countermeasures, unconscious bias, with focus on gender, ethnicity and religion, but also e.g. socio-economic background, intersectionality, e.g. how do different grounds of discrimination (and other circumstances) interact, and cultural and linguistic factors, when different cultures with different values and attitudes meet.

4) Better PhD student education for all

We have proposed and delivered a 3 hp PhD course on “Social Consequences of Technology and Trustworthy AI” funded by equal opportunities funding. The course was delivered in fall 2022 by PhD student representative in the equal opportunities group Natalia Calvo Barajas. The lectures part of the course was open to all staff at the department.

5) Career development from an equal opportunities perspective

We have discussed plans to suggest the Head of Research and the PAP group to support career development from an equal opportunities’ perspective.
6) Supporting equal opportunities aware research

We have invited Moa Persdotter from Vinnova to discuss, in a seminar open to all staff at the department, diversity as a driving force for innovation.

We have proposed to the Head of Department to open a call for proposals for postdocs in equal opportunities aspects of IT, funded at 80% by equal opportunities funding.

7.2 Equal opportunities budget allocated in 2022

The Equal Opportunities Officer performs duties at 10% of full-time employment. This time was funded by the equal opportunities budget at the Department.

Funding awarded to equal opportunities projects in 2022: 470 098 SEK

7.3 Quantitative description of current situation

7.3.1 Employees* at the Department of Information Technology as at 31 December 2022

<table>
<thead>
<tr>
<th>Total employees</th>
<th>Women</th>
<th>% of women out of 304</th>
<th>Men</th>
<th>% of men out of 304</th>
</tr>
</thead>
<tbody>
<tr>
<td>304 people</td>
<td>92</td>
<td>30%</td>
<td>212</td>
<td>70%</td>
</tr>
</tbody>
</table>

*Employees working at least 20% of FTE.

Difference compared to 2021: six fewer people employed in 2022, of which 2% more women

7.3.2 Number of full-time employees at the Department of Information Technology, as at 31 December 2022

<table>
<thead>
<tr>
<th>Full-time employees</th>
<th>Women</th>
<th>% of women out of 273</th>
<th>Men</th>
<th>% of men out of 273</th>
</tr>
</thead>
<tbody>
<tr>
<td>273 people</td>
<td>83</td>
<td>30%</td>
<td>190</td>
<td>70%</td>
</tr>
</tbody>
</table>

7.3.3 Leave at the Department of Information Technology 2022

Total employees on parental leave and temporary parental leave at some point during the period 1 January – 31 December 2022

<table>
<thead>
<tr>
<th>Parental leave</th>
<th>Women</th>
<th>% of women out of 45</th>
<th>Men</th>
<th>% of men out of 45</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 people</td>
<td>22</td>
<td>49%</td>
<td>23</td>
<td>51%</td>
</tr>
</tbody>
</table>

Difference compared to 2021: five fewer employees on parental leave in 2022. The percentage of women in 2021 was 32, men 68

Percentage of employees on parental leave and temporary parental leave of total employees, 1 January – 31 December 2022

<table>
<thead>
<tr>
<th>Parental leave</th>
<th>Women</th>
<th>% of 304</th>
<th>Men</th>
<th>% of 304</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 out of 304 employees = 15%</td>
<td>22</td>
<td>7.5%</td>
<td>23</td>
<td>7.5%</td>
</tr>
</tbody>
</table>
Difference compared to 2021: The percentage of employees on parental leave in 2021 was 16 in total, of which 5 women and 11 men

### 7.3.4 Sick leave at the Department of Information Technology 2022

Total employees on sick leave at some point during the period 1 January – 31 December 2022

<table>
<thead>
<tr>
<th>Sick leave</th>
<th>Women</th>
<th>% of women out of 90</th>
<th>Men</th>
<th>% of men out of 90</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 people</td>
<td>41</td>
<td>45.5%</td>
<td>49</td>
<td>54.5%</td>
</tr>
</tbody>
</table>

Difference compared to 2021: 29 more people on sick leave in 2022. The percentage of women in 2021 was 46, men 54

Percentage of employees on sick leave of total employees, 1 January – 31 December 2022

<table>
<thead>
<tr>
<th>Sick leave</th>
<th>Women</th>
<th>% of 304</th>
<th>Men</th>
<th>% of 304</th>
</tr>
</thead>
<tbody>
<tr>
<td>90 out of 304 employees = 29.5%</td>
<td>41</td>
<td>13.5%</td>
<td>49</td>
<td>16%</td>
</tr>
</tbody>
</table>

Difference compared to 2021: The percentage of employees on sick leave in 2021 was 20 in total, of which women 9, men 11

### 7.3.5 Doctoral students 2022

<table>
<thead>
<tr>
<th>Doctoral students active in 2021 for all or part of the year</th>
<th>Women</th>
<th>% of women out of 125</th>
<th>Men</th>
<th>% of men out of 125</th>
</tr>
</thead>
<tbody>
<tr>
<td>125 people</td>
<td>38</td>
<td>30%</td>
<td>88</td>
<td>70%</td>
</tr>
</tbody>
</table>

Difference compared to 2021: Equal number of women, but men increased by one person in 2022.

#### Doctoral student financing

<table>
<thead>
<tr>
<th>Total of 125 doctoral students active for all or part of the year</th>
<th>Women %</th>
<th>Men %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctoral position, 110 people</td>
<td>31%</td>
<td>69%</td>
</tr>
<tr>
<td>Industry-based doctoral student, 5 people</td>
<td>40%</td>
<td>60%</td>
</tr>
<tr>
<td>Gainfully employed with affiliation to a university (external + MC), 0 people</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>No funding, 6 people</td>
<td>17%</td>
<td>83%</td>
</tr>
<tr>
<td>Scholarship, 0 people</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
Total graduating with PhD, 1 January – 31 December 2022

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>% of women out of 17</th>
<th>Men</th>
<th>% of men out of 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>17 people</td>
<td>5</td>
<td>29%</td>
<td>12</td>
<td>71%</td>
</tr>
</tbody>
</table>

Difference compared to 2021: two more graduates in 2021. The percentage of women in 2021 was 21, men 79

Licentiate degree

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>% of women out of 5</th>
<th>Men</th>
<th>% of men out of 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 people</td>
<td>1</td>
<td>20%</td>
<td>4</td>
<td>80%</td>
</tr>
</tbody>
</table>

Difference compared to 2021: four more licentiate graduates in 2022. The percentage of women in 2021 was 0, men 100

Total doctoral students on sick leave at some point during the period 1 January – 31 December 2022

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>% of women out of 28</th>
<th>Men</th>
<th>% of men out of 28</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 people</td>
<td>12</td>
<td>43%</td>
<td>16</td>
<td>57%</td>
</tr>
</tbody>
</table>

Difference compared to 2021: two more doctoral students on sick leave in 2022. The percentage of women in 2021 was 46, men 54.

Percentage of doctoral students on sick leave out of total doctoral students during the period 1 January – 31 December 2022

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>% of women out of 125</th>
<th>Men</th>
<th>% of men out of 125</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 people</td>
<td>12</td>
<td>10%</td>
<td>16</td>
<td>13%</td>
</tr>
</tbody>
</table>

Difference compared to 2021: 21% total, in 2021, women 10% and men 11%

7.3.6 First- and second-cycle level students

Students registered at first- and second-cycle level throughout 2022

<table>
<thead>
<tr>
<th></th>
<th>Women</th>
<th>% of women out of 5260</th>
<th>Men</th>
<th>% of men out of 5260</th>
</tr>
</thead>
<tbody>
<tr>
<td>5282 people</td>
<td>1779</td>
<td>34%</td>
<td>3504</td>
<td>66%</td>
</tr>
</tbody>
</table>

Difference compared to 2021: 23 more students in 2022. The percentage of women in 2021 was 33, men 67