Development plan for N2COS

October 2023

The N2COS programme was evaluated in 2022/2023 by a committee consisting of Mikael Asplund, Fredrik Engström, Lars-Henrik Eriksson and Jörgen Gustafsson. The committee visited the university during two days in February 2023, and submitted its review in May. The recommendations of the evaluation committee are listed below, along with suggested actions.

The grouping of the recommendations follows the structure of the evaluation committee's report. The headlines are taken from that report.

Below some (sometimes very rough) resource estimates are included for suggested actions. The hours given are intended to reflect the *extra* work, caused by the suggested actions, for employees at the department or faculty. For recurring actions the estimates are for each year. Time required for follow-up actions, for instance if a survey indicates that there is a problem, is not included.

1 Achieved study results match intended learning outcomes and the qualitative targets of the Higher Education Ordinance

"Ensure that the programme syllabus explicitly requires progression and depth for every student."

Action	Adjust the programme syllabus. One could for instance require that at least one of the elective courses is a second cycle course with computer science as a main field of study that has another second cycle course with computer science as a main field of study as a prerequisite.
Responsible	The programme supervisor.
Priority	High.
Resources	6 hours.
Time	In time for the start of the academic year 2025/2026.

"Consider adjusting the admission criteria so that students that enter the program can benefit from most of the possible specialisations within the programme."

Discussion	Most of the introductory courses in mathematics offered by the university seem to be taught in Swedish, so if a student who lacks knowledge of Swedish does not have enough credits in mathematics, then it can be hard to compensate for this.

Action	Adjust the programme syllabus: require more mathematics.
Responsible	The programme supervisor.
Priority	High.
Resources	6 hours.
Time	In time for the start of the academic year 2025/2026.

"Continue the effort to systematically map learning outcomes from courses to programme learning outcomes."

Discussion	This kind of mapping already exists for compulsory courses. With the current programme syllabus there is perhaps little point in creating a mapping for the large number of elective courses. However, changes to the programme syllabus may lead to a different situation.
Action	Revisit this recommendation once the syllabus has been changed.
Responsible	The programme supervisor.
Priority	Low.
Resources	1 hour.
Time	When the syllabus has been changed.

"Ensure that every student achieves the programme learning outcomes relating to judgement and approach."

Discussion	The evaluation committee stated that *'based on sampling the theses provided as background material, there is considerable variation in whether the students really have to "demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used" as one of the general learning goals stated'.* This is partly covered by the compulsory course DIT199, for which two of the learning outcomes are *"identify possible ethical and societal consequences of a method, design or system"*, and *"evaluate possible decisions, based on general ethical values"*. This is also addressed by the MSc thesis courses DIT910/DIT920, for which the learning outcomes include *"in a scientifically correct way, relate to current research and development work"*, *"within the framework for the specific project, identify which issues need to be addressed for relevant societal, ethical and ecological factors to be observed"*, and *"observe and discuss ethical aspects of research and development work, both pertaining to how the work is carried out as well as what it explores or develops"*.
Action	When an examiner is asked to examine a thesis project, stress that the students should only be allowed to pass the course if they satisfy all the requirements in the relevant master's thesis course syllabus.
Responsible	The master's thesis coordinator.
Priority	High.
Resources	1 hour.
Time	Already in progress.

2 Teaching is focused on student-centred learning

"Increase efforts to encourage and reward pedagogical development and excellence."

Discussion The evaluation committee stated the following:

> *"There seem to be a number of factors that limit the tendency to try out alternative forms of teaching and examining. First, the teachers have limited time to engage in course development since they are pressed with a high workload as it is and there are obstacles to increasing the staff […]. The teachers describe a situation where it is not difficult to get financial support for course development, but difficult to find the time to do the work. Second, pedagogical development at large is not prioritised in relation to other activities. This can for example be seen in the lack of mechanisms to support pedagogical excellence at the faculty. Finally, the administrative overhead in making changes to courses (i.e., two separate and lengthy processes for changing syllabi) discourages from making changes."*

As noted by the committee one issue may be a high teaching load. This is addressed in Section 4. Administrative overheads are addressed in Section 8.

Action Encourage the units of the Computing Science division to discuss things related to pedagogy at least once per semester.

Responsible The programme supervisor.

Priority Medium.

Resources 80 hours (for the discussions).

Time This will be communicated during 2023.

"The programme should devise a strategy for the course development including modern pedagogical techniques."

Discussion Strategies for course development are typically developed for the entire department.

Action Discuss the department's course development strategy with the department's GU programme supervisors with the aim to improve the course development process for all the programmes.

Responsible The assistant head of department with responsibility for undergraduate education.

Priority Medium.

Resources 20 hours.

Time During the current academic year.

3 The content and form of teaching rests on scientific bases and proven experience

"Consider developing more courses that connect to research done at the host department."

Discussion	The department has recently finished a study of the set of courses on offer, and there are plans to devise a strategy for course development.
Action	When the department is devising the new strategy for course development it should consider including a goal to phase out small courses that are not closely connected to research done at the department in favour of courses that are, and to have a reasonable balance between small and large courses, so that it is not impossible to create new (initially small) courses closely connected to research.
Responsible	The assistant head of department with responsibility for undergraduate education.
Priority	Medium.
Resources	1500 hours.
Time	During the current academic year.

4 Teachers have up-to-date and adequate competence as regards their subjects and teaching and learning in higher education, and the numbers of teachers are in proportion to the scope and content of study courses and programmes

"The number of teachers should be increased to provide a buffer and to make time available for pedagogical development."

Discussion	There is ongoing work on reducing the average teaching load for the department's teachers. This could involve hiring of new teachers, but also closure of courses or other things. The programme supervisor has already been interviewed by the person in charge of an inventory of the department's courses and programmes.
Action	The department is working on this, and the programme has provided input to the department's process. No further action from the programme is planned right now, but that could change depending on future developments at the department.

"The department should devise a strategy for the pedagogical development of its teaching staff."

Discussion The evaluation committee stated the following:

'According to the supplied list of teachers/examiners on a sample of courses, a notable number of teachers do not have the required pedagogical training. […] Once teachers have taken the compulsory pedagogical training, there is little further personal pedagogical development. There are some pedagogical seminars and collegiate discussions at the department, but this is mostly informal. There is no strategy for continued development of teachers' pedagogical skills beyond the required minimum. Likewise, there is no organised mentorship for younger teachers. […] None of the teachers involved in the programme have been appointed excellent teacher (or, as far we understand, tried to be). There is no tradition in the department and no "carrot".'

Some new teachers start out by teaching in a team, but in other cases some form of mentorship might be helpful.

Action The department will have a workshop aimed at developing a strategy. The strategy should include the possibility for some kind of mentorship for those new teachers who do not start out by teaching in a team.

Teachers, in particular those employed by Chalmers, will be encouraged to take part in the activities provided by the department for Pedagogical Development and Interactive Learning (PIL).

Responsible The assistant head of department with responsibility for undergraduate education.

Priority Medium.

Resources 20 hours (for the workshop).

Time During the current academic year.

5 Study courses and programmes are relevant to the needs of the students and society

"Increase strategic collaboration with industry around the programme syllabus."

Action Discuss changes to the programme syllabus in the programme council, which at the moment has two industry representatives.

Responsible The programme supervisor.

Priority Medium.

Resources Less than 1 hour.

Time When it is appropriate to do so.

"Carry out alumni surveys."

Discussion The number of recent graduates from the programme that have registered in the university's alumni database seems to be so small that one could not carry out a meaningful anonymous survey.

Action Carry out alumni surveys for all of the department's GU programmes at once (but not too often, perhaps once every third year).

Responsible The assistant head of department with responsibility for undergraduate education.

Priority Medium.

Resources 10 hours.

Time A first survey in the spring of 2024.

"The department should continue and intensify the efforts to promote the interest for computing science among young women and girls."

Discussion The evaluation committee stated that *"There are very few women in the programme even in comparison with similar programmes in other universities"*. However, among the latest group of students who started the programme it appears as if almost 39% are women.

Action Continue as before.

6 Students have influence in planning, implementing and monitoring study courses and programmes

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"The newly constituted programme council should take an active role in discussions around the course curriculum and the evaluation of the programme to strengthen the influence of the students on strategic decisions."

Action Discuss the programme, and in particular student and/or alumni surveys, during the programme council meetings.

Responsible The programme supervisor.

Priority Medium.

Resources Less than 1 hour.

"The programme council should include more than one student representative to get a broader student perspective."

Action Strive for one student from the first year and one from the second.

Responsible The programme supervisor.

Priority Medium.

Resources 1 hour.

Time Already in progress.

"The students should be informed about the processes for student influence at the start of the programme."

Action Inform the students on the first day of the programme and include the information on the programme's Canvas page.

Responsible	The programme supervisor.
Priority	Medium.
Resources	Less than 1 hour.
Time	Already implemented.

"The programme should adapt the same process for randomly selecting course representatives that Chalmers programmes use."

Action	Use the same procedure for GU students as for Chalmers students.
Responsible	The education coordinator.
Priority	Medium.
Resources	20 hours.
Time	During the current academic year.

"There should be regular student surveys to get the students' overall view on the programme."

Action	A survey once per year.
Responsible	The student union conducts the survey and presents the results to the study counsellor.
Priority	Medium.
Resources	2 hours.
Time	A first survey this academic year.

7 The study and learning environment is accessible and purpose-oriented for all students

"Investigate the possibility to get access to more teacher-led computer labs and more student bookable group rooms."

Discussion	The university has already decided to investigate the use of group rooms and similar things, and to act on this, and the IT faculty is involved in this process (GU 2022/557). The programme does not plan any unilateral action regarding this. When it comes to teacher-led computer labs it is unclear how large the problem actually is.
Action	Investigate how large the problem with teacher-led computer labs is.
Responsible	The assistant head of department with responsibility for undergraduate education.
Priority	Medium.
Resources	4 hours.
Time	During the current academic year.

"Ensure that the move of the campus at Lindholmen to Johanneberg doesn't negatively affect the availability of lecture halls, labs and study places."

Discussion	The needs of the programme's students mostly seem to align with the needs of other students, and thus there does not seem to be much need for the programme to take any particular action, apart from what the department is and will be doing. There is one exception: the students of the N1COS, N2ADS and N2COS programmes currently have their own space, "Monaden", which might be affected by the move. However, this development plan is supposed to contain concrete actions taken in the near future, and the processes related to the move that could affect Monaden are likely out of scope for this plan.
Action	No planned action other than monitoring the decisions of the relevant working groups related to the move.

"With the aim of creating a stronger cohesion in the student group, in collaboration with student organisations, arrange events and activities for the GU students, for example in the form of student-led seminars that may be combined with social activities."

Discussion	The student union organised events in conjunction with the start of the programme, and seems to plan to organise more events during the year.
Action	If appropriate, provide support to the student union.
Responsible	The student union, with support from the department.
Priority	Medium.
Resources	1 hour.

"Together with the student unions at GU and Chalmers discuss the situation for the GU students at campus Johanneberg with the intention to overcome some of the issues raised."

Discussion	The matters raised in the report that this comment seems to refer to, *"not getting reduced prices on coffee and food, non-access to swimming pool"*, are things that the Chalmers student union has more control over than the two universities. Furthermore the unions already seem to be in discussion regarding matters of this kind.
Action	No action planned by the department: hopefully the student unions can work something out without interference from the university.

"Ensure that teachers and other staff members are aware of the situation for GU students."

Discussion	The department already stresses these issues as part of the onboarding process. The evaluation committee stated that one issue mentioned by students was *'lecturers "forgetting" about the GU students'*. A student

	union representative stated that, based on what this person had heard, the problems primarily relate to course board meetings, in which it has appeared that Chalmers students' opinions have been prioritised over those of GU students.
Action	Inform those in charge of the relevant course board meetings of this problem, so that they can ensure that the views of GU students are taken into account in a reasonable way.
Responsible	The assistant head of department with responsibility for undergraduate education.
Priority	Medium.
Resources	Less than 1 hour.
Time	Before the end of 2023.

8 The study courses and programmes are continuously monitored and developed

"Create fora for discussing development of courses and programmes. One theme to discuss would be to share good examples of working with course evaluations."

Discussion	There is already a forum for discussing programme development, the programme supervisors for the department's GU programmes meet regularly.
Action	Encourage research groups to discuss course development regularly (for instance once per semester).
Responsible	The assistant head of department with responsibility for undergraduate education.
Priority	Medium.
Resources	400 hours.
Time	No later than January 2024.

"Include the programme supervisor and/or director of study in the course evaluation process to ensure that the view of the GU programme is present; and include teachers from the master's programme in the programme council meetings."

Discussion	The programme has a large number of elective courses. Two members of the programme council are currently (in the current academic year) teaching second cycle courses in computer science that are available to students of the programme.
Action	The programme supervisor should take part in course board meetings for a limited number of courses.
Responsible	The programme supervisor.
Priority	Medium.
Resources	5 hours.
Time	Starting this academic year.

"Ensure that the administrative process for revising course syllabi is effective and streamlined between GU and Chalmers to lower the hurdles for course development."

Action	Aim to make the process easier for the examiners by improving the administrative support available to them in a process that takes both Chalmers and GU constraints into account.
Responsible	The assistant head of department with responsibility for undergraduate education.
Priority	Medium.
Resources	8 hours.
Time	During the current academic year.