



IT FACULTY

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Dnr V 2018/611

REPORT

DEVELOPMENT PLAN

**N1SOF – Software Engineering and Management
bachelor program, 180 credits**

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University of Gothenburg

The Department of Computer Science and Engineering, and the Software Engineering and Management bachelor program in particular, would like to thank the external evaluation committee for their report and recommendations. For most of the parts and recommendations we agree with the external evaluation committee, and we believe that the recommendations are well-grounded and possible to implement. Below are our specific comments for each recommendation from the report together with other known improvements for N1SOF. Recommendations from the external evaluation committee are labeled “**Recommendation**” while other known improvements are labeled “**Improvement**”.

The recommendations and improvements are divided into seven categories: General (recommendations not specific for N1SOF), N1SOF - General, Pedagogical approaches to courses, Project courses, Course evaluations, Study environment, and Student engagement.

Please note, the order of the below recommendations and improvements are not based on the order that they appear in the evaluation report from the evaluation committee, nor are they based on the order in which they may be implanted.

The action points proposed in this document, where the Program Manager is the responsible role/function, are planned on a budget of 10% of the yearly working time of the responsible program manager (approximately 170 hours). This is to ensure that all action points planned can be executed within a year without negatively impacting the duties and task of the program management to an unreasonable degree. However, some action points (where the Program Manager is responsible) require more time in order to be addressed adequately. These action points are marked with an estimate of the **required resources**. Please, note all of the proposed action points, where the Program Manager is the responsible role/function, can only be performed if the faculty decides to provide additional time budget for the program management.

For all other responsible roles/functions, there is an estimate of **required resources** for each action point.

General

Recommendation 1: Students to be represented in the faculty board

“Students additionally ask to be represented in the faculty board.”

We agree that it is important to have students represented in the faculty board. In the IT Faculty’s faculty board there are three seats for student representatives. In the current faculty board, one of the student representatives is a student from the bachelor program in Software Engineering and Management. Since students are already represented in the faculty board, we consider this recommendation to be implemented.

Action Point: Inform the GU student union about this recommendation. Then, it is up to the GU student union to decide how they select the student representatives for the IT Faculty board.

Responsible role/function: Program Manager of N1SOF (Richard Berntsson Svensson)

Expected to be implemented: Fall 2019

Recommendation 2: A formal description of the program manager role and having a deputy program manager

"The role of the program coordinator is well understood, but not formally described."

"A formal description of the program coordinator role and having a deputy program coordinator is recommended."

Although, as pointed out by the evaluation committee, the role of the program manager is well understood by the program manager, we agree that a formal description of the program manager role is needed. Instead of having one specific formal description for each program manager at the department of Computer Science and Engineering (CSE), University of Gothenburg, the formal description of the program manager role should be a general description that applies to all program managers at CSE, University of Gothenburg.

We have a positive view of having a deputy program manager. However, before assigning the role of deputy program manager to a faculty member, we need to look into the scope of this role, the workload, responsibilities etc.

Action Point 1: Create a formal description of the program manager role at CSE, University of Gothenburg. In addition to the formal description, a template for the role description will be created at the faculty level.

Responsible role/function: Vice-prefect (Staffan Björk)

Required resources: 20 hours

Expected to be implemented: Fall 2019

Action Point 2: Look into the scope of the role of deputy program manager. This will include a discussion with all program managers.

Responsible role/function: Vice-prefect (Staffan Björk)

Required resources: 80 hours

Expected to be implemented: Spring 2020

Recommendation 3: Improve course plans (syllabuses) process

"It takes a long time to establish course plans and the result is often very general. This is partly due to that the systems for GU (Göteborgs Universitet) and Chalmers differ. Too general course plans make it hard for students and teachers to plan the courses. It also makes them less transparent for evaluation and improvement."

We agree with the evaluation committee that it takes a long time to establish (create/update) course syllabuses for our courses. This is an issue that has been known to us before the evaluation of NISOF. The vice-prefect (Staffan Björk) has already started to look into the process for establishing course syllabuses with the goal to improve the process and to shorten the time it takes. The new process, with reduced time to establish course syllabuses, should be completed during the fall of 2019 (see Action Point 1 below).

We do not agree with the evaluation committee that the long time for establishing course syllabuses is partly due to that the systems (and dates) for GU and Chalmers differ. One reason is that the deadline for establishing course syllabuses at GU comes first, which means that the responsible teacher updates the course syllabus for the GU course code first. Then, when the course syllabus has been approved at GU, the Chalmers deadline is approaching. This means that the responsible teacher takes the same updates and implement them in the Chalmers course code. Another reason is that the vast majority of the courses in N1SOF do not have a Chalmers course code, hence the responsible teacher does not have to submit an updated course syllabus at Chalmers.

Action Point: Improve the process for establishing course syllabuses at CSE

Responsible role/function: Vice-prefect (Staffan Björk)

Required resources: 20 hours

Expected to be implemented: Fall 2019

N1SOF - General

Recommendation 4: Make use of CDIO-matrices

"Make use of CDIO-matrices to relate individual courses to the learning goals. Experience shows that compiling all courses into a matrix for the entire study program is a good way to ensure coverage of goals and to identify development areas."

Using a matrix to link the learning outcomes of the program to the mandatory courses is a good idea, and a good approach to identify development areas in the program. When we create a CDIO matrix we will map the national learning outcomes to the learning outcomes of N1SOF, and then map the learning outcomes of N1SOF to all the mandatory courses in N1SOF.

Action Point: Create a program matrix using the CDIO framework

Responsible role/function: Program Manager of N1SOF (Richard Berntsson Svensson)

Expected to be implemented: Fall 2019

Recommendation 5: Management and Computer Science subjects could be a larger part of the program

"One doubt is if students obtain the required skills in the computer science area, with the current setup with two courses, the mathematical foundation course and a course on algorithms and data structures."

"The main field, software engineering is well catered for. However, management and computer science are two areas that could be a larger part of the program"

As pointed out by the evaluation committee, the main field, software engineering, is well covered in N1SOF. If management and computer science subjects should be a larger part of the program, some courses in software engineering needs to be removed from the program. There is a need to find a right balance between software engineering, computer science, and management courses in the program.

Regarding including a larger part of management in the program, we believe that we have several courses that introduce and utilize management and management related subjects (see Recommendation 12). However, this needs to be discussed.

When it comes to computer science courses, the evaluation committee pointed out that we only have two courses (mathematical foundation – DIT022, and data structures and algorithms – DIT181) in computer science in the program, which may not be enough for the students to obtain the needed skills in computer science. However, the number of computer science courses in the program depends on how one count the courses. For example, at other universities, an introduction course to object-oriented programming and a course in databases are counted as computer science courses. We have both of these courses in NISOF. In addition, we have a course in development of embedded and real time systems (DIT632), and a course in software quality and testing (DIT635). Both of these courses partly address computer science subjects, the real time systems part in DIT632 and the testing part in DIT635. However, this needs to be discussed.

Action Point: Discuss the balance of software engineering, computer science, and management courses in NISOF. The created matrices based on the CDIO framework from Recommendation 4 will be used as input to this discussion. In addition, we will contact a researcher/teacher in management, e.g. at Handelshögskolan, to take a look at NISOF to give us pointers/recommendations/ideas of how to introduce more (if needed) management in NISOF.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Spring 2020

Recommendation 6: Cooperation with teachers that conduct research in management

“Only one teacher has research in management, but many teachers have research connected to managing software projects. This is a vulnerability that might be solved with cooperation with teachers that conduct research in management.”

Our bachelor program is called Software Engineering and Management, which means that we focus on both the technical aspects of Software Engineering as well as management. Hence, we understand the evaluation committee’s comment that only having one teacher that conducts research in management can be a vulnerability. As the evaluation committee pointed out, we have many teachers that conducts research connected to managing software projects (software project management). Moreover, we have teachers that conducts research connected to software product management, managing agile teams and group dynamics, and other aspects of management. However, since we have many teachers conducting research connected to several management subjects, and that the same teachers also have the technical knowledge (which is needed in order to teach, e.g. our project courses) makes us convinced that we do have teachers that can teach the management subjects. However, it is a good idea to discuss how we teach management in NISOF with a teacher/researcher in management.

Action Point: Contact researchers/teachers in management, e.g. at Handelshögskolan, to discuss how we teach management in NISOF, to discuss potential improvements and cooperation. This discussion will also involve our teacher that conducts research in management.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Spring 2020

Recommendation 7: Increase the number of students who continue with studies on an advanced level (master)

“It seems like a majority of the graduated students start a job in the industry, sometimes even before graduating. A rather small group continues with studies on an advanced level.”

That a majority of the students start working in industry after they graduated, or even before graduating shows that we have an attractive education and attractive students for the industry. To the best of our knowledge, the majority of our students want to work in industry directly after their graduation.

We do have a large group of students who continues with studies on an advanced level (master level). They continue their studies in Software Engineering and other fields such as Computer Science, or Financial Engineering at other universities than University of Gothenburg. There is a rather small group of students that continues with studies on our master program in Software Engineering and Management at University of Gothenburg (N2SOF). One reason for this may be that the courses and course syllabuses on N2SOF and N1SOF are similar, which may not motivate students to spend another two years studying similar courses.

In the short term we will form focus groups of teachers teaching similar subjects on N1SOF and N2SOF where the goal will be to analyze the similarities and overlaps. The action points and steps forward in this matter are described in the development plan for N2SOF, Recommendations 6, 7, and 10.

Recommendation 8: Specific prerequisites

“The required prerequisites of the students are very general, which makes it necessary to start at a low level to make everyone prepared to fulfill their studies.”

This is a good point by the evaluation committee. We will have a discussion about the required prerequisites for the program (N1SOF) where we will discuss if there is a need to change any prerequisites, e.g. increase the level of math to be admitted to N1SOF.

Action Point: Analyze and, if needed, revise the required prerequisites for N1SOF

Responsible role/function: Program Manager of N1SOF (Richard Berntsson Svensson)

Expected to be implemented: Fall 2019

Improvement 1: Re-structure the courses in N1SOF

In the fall of 2017 (HT17), the first students in our new bachelor program of Software Engineering and Management (N1SOF) started their education. Now, two years later, we have given the courses in the first two years (all courses during these two years are mandatory courses). This has provided us with valuable feedback about individual courses, the structure of the program and the order in which the courses are given. Based on this feedback and feedback from our students, and when all of the action points (based on recommendations from the evaluation committee) in this development plan have been implemented, we will look into how to change the structure of, and the order in which the courses are given in N1SOF. The re-structuring of the courses in N1SOF will improve the progression of learning in the technical subjects as well as the progression of management subjects.

Action Point: Re-structure the courses in N1SOF. This will be done in cooperation with all teachers at the Software Engineering division, all Program Managers that have students in our courses, and the vice-prefect. In addition, we will invite a researcher/teacher from the mathematics department and a

researcher/teacher in management in the discussion of re-structuring the courses in N1SOF. This action point also includes updating the course syllabuses of the affected courses.

Responsible role/function: Program Manager of N1SOF (Richard Berntsson Svensson)

Required resources: 120 hours

Expected to be implemented: September 2020 (a proposal will be ready)

Improvement 2: Decrease dropout rate

In 2017, we had 75 students starting their studies in our bachelor program of Software Engineering and Management (N1SOF). In their fourth semester (Term 4), we had 35 students registered for the mandatory project course in study period 4 (this course is only available to N1SOF students). This means that almost 54% of the students who started N1SOF in 2017 did not register for the project course. In 2018, we had 82 starting their studies in N1SOF, and in the second semester (Term 2) 70 students were registered for the mandatory project course in study period 4 (this course is only available to N1SOF students). This means that almost 15% of the students starting in 2018 did not register for the project course in their second semester.

There could be several reasons for this high dropout rate, which includes:

- wrong expectations of what it means to study Software Engineering, and wrong expectations of the program (N1SOF),
- students do not fulfill the prerequisites for the courses within the program, i.e. some students do not complete the courses and therefore will not be able to continue their studies within the program, and
- low quality of some courses in the program.

Regarding low quality of some courses in N1SOF, one reason that affected the quality of some courses was lack of teachers, which meant that some teachers had to teach much more than they were planned to do. This has been addressed by hiring two new faculty members. Other reasons that may have affected the quality in some courses are addressed in this development plan. When these recommendations have been addressed and implemented, we believe that the quality of the courses will improve. In addition, by improving the structure of N1SOF and the order in which the courses are given, we also believe that this will have a positive effect on the quality of the courses.

In addition, we performed a first analysis of historical data at GU about students leavening/dropping out of educational programs. We analyzed the data for N1SEM and N1SOF. The analysis indicated that some groups of students are more likely to dropout (from N1SOF) than others.

Action Point 1: New and improved program website and a marketing video

Responsible role/function: Program Manager of N1SOF (Richard Berntsson Svensson)

Expected to be implemented: October 2019

Action Point 2: Introduce SI-PASS method in two courses and evaluate the results of using SI-PASS

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson) and Study Counsellor (Tina Mathé)

Expected to be implemented: September 2019 (for the first course) and January 2020 (for the second course). Spring 2020 for analyzing the results.

Action Point 3: Investigate why students decide to leave/dropout of NISOF. This investigation includes going back to the historical data to run a more in-depth analysis, and then investigate why certain groups of students decide to leave/dropout of NISOF. This investigation will also include interviewing current students, and contacting students who have left/dropped out of NISOF.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Required resources: 200 hours

Expected to be implemented: Spring 2020

Pedagogical approaches to courses

Recommendation 9: Improve the implementation of flipped-classroom, including quality of videos

“The virtual space is satisfying to an average extent. The students find the flipped-classroom method as not successfully applied, and there are complaints on the quality of video recordings of the lectures.”

Based on the course evaluations from courses that used flipped-classroom, we have seen a similar result as pointed out by the evaluation committee. We agree with the evaluation committee that the implementation of flipped-classroom needs to be improved. The first step is to discuss, among the teachers that use flipped-classroom, if this is the most appropriate pedagogical approach for the courses. We should not implement a pedagogical approach if it is not a good approach for learning. If flipped-classroom is the preferred pedagogical approach, then each examiner/course responsible needs to take time to think about the implementation of flipped-classroom, what should be thought with videos, how should the physical meetings look like in order to enhance the learning. It is important to think about the whole setup when using flipped-classroom and not just about the videos. The physical meetings are important when using flipped-classroom.

Regarding the quality of video recordings, PIL has a studio that can be used for recording videos with high quality video and sound. This is something that the examiners/course responsible that would like to use flipped-classroom can use in order to improve the quality of the video recordings. However, another important part of having high quality video recordings is to carefully plan the content of each video. It is not just the quality of the video and sound that is important, but also the content of the videos. This need to be carefully planned by the examiner/course responsible.

Action Point 1: The Program Manager will attend a flipped-classroom seminar at PIL and summarize a set of success criteria for using flipped-classroom.

Responsible role/function: Program Manager of N1SOF (Richard Berntsson Svensson)

Expected to be implemented: October 4, 2019

Action Point 2: The Program Manager will organize a flipped-classroom seminar at the Software Engineering division to discuss the implementation of, and potential improvements of using flipped-classroom in N1SOF. The information and success criteria identified in Action Point 1 (above) will be discussed in this seminar as well.

Responsible role/function: Program Manager of N1SOF (Richard Berntsson Svensson)

Expected to be implemented: Fall, 2019

Recommendation 10: Improve pedagogical skills in the math course (DIT022) and collaborate with the mathematics department

"Teachers' pedagogical skills are in overall satisfying, with the exception, according to the students, of the math course."

"No teacher is a professional mathematician. Students expressed problems with the mathematics course that might be attained with collaboration with the mathematics department."

Our math course (DIT022) was first given in study period 1, fall 2017. Based on the feedback from the students, the teachers improved the course for 2018. The results from the course evaluation in 2018 showed that the math course did improve, but there were still things that needed to be improved. Based on the feedback from 2018, the teachers have improved the course for 2019 (DIT022 will be given in study period 1, fall 2019). The teachers showed the improvements for DIT022 for the Teaching Assistants (N1SOF students who took DIT022 in 2018 or 2017) who were happy with the improvements. In addition to the improvements made by the teachers, for 2019 we will introduce and use the SI-PASS method in DIT022.

In DIT022 the teachers use flipped-classroom, hence Recommendation 9 and its action points will be applied to DIT022 as well.

With regards with collaboration with the mathematics department, we will contact the mathematics department to see if there is an interest and room for collaboration, e.g. having guest lectures by teachers from the mathematics department, to get feedback on the content, design and the used pedagogical method/approach.

Action Point 1: Evaluate the effect of the improvements and the use of SI-PASS in DIT022.

Responsible role/function: Program Manager of N1SOF (Richard Berntsson Svensson)

Expected to be implemented: Fall 2019

Action Point 2: Contact the mathematics department to see if there is an interest in collaboration and to review our math course.

Responsible role/function: Director of Studies (Eric Knauss)

Required resources: 4 hours

Expected to be implemented: Fall 2019

Recommendation 11: Include “recommended reading” in all courses

“Besides the course books, some of the courses also point to “recommended reading” that can be used for students to broaden or go in-depth with their studies. This is a good practice worth to follow.”

In the few courses where “recommended reading” has been used, the feedback from the students has been very positive. The students have appreciated the opportunity to have more material (that is selected by an expert, i.e. the teacher) to broaden their knowledge of a certain topic. In addition, in one of the latest course evaluation meetings (during spring 2019), the student representatives brought up that they would like to have “recommended reading” (i.e. literature, videos etc. that are not mandatory to pass the course) in all courses in N1SOF. Based on the feedback from our students and the recommendation from the evaluation committee, all courses in N1SOF shall have “recommended reading” for students who wants to broaden their knowledge about the topic. This will be implemented as part of a new template for course PMs at N1SOF. The Program Manager is working on improving the course PM template for courses at N1SOF. The new template shall be used by all courses at N1SOF, which will help in making sure that all courses have the same information and that all of the required information will be available to the students. One section in the new template will be mandatory course literature (i.e. the literature that is used in the course and that is used as part of the examination) and another section will be recommended reading. The new course PM template will be developed together with the program manager of N2SOF (Regina Hebig).

Action Point 1: Improve the course PM template, including having a section for recommended reading

Responsible role/function: Program Manager of N1SOF (Richard Berntsson Svensson) and Program Manager of N2SOF (Regina Hebig)

Expected to be implemented: Fall 2019

Action Point 2: Inform all teachers at the Software Engineering division about the new course PM template

Responsible role/function: Program Manager of N1SOF (Richard Berntsson Svensson)

Expected to be implemented: Fall 2019

Recommendation 12: Improve progression in management subjects

“Progression in management subjects is under-documented in the course plans.”

We agree with the evaluation committee, the progression in management subjects should be better documented in the course syllabuses. Project management and the management subject is first introduced in the course Mini Project: Team programming (DIT092) in the first semester where the teacher introduce students to project management and the management subject. Additional mandatory

courses that contains aspects on management are Requirements and User Experience (DIT045), Mini Project: Systems Development (DIT112), Mini Project: Distributed Systems Development (DIT355), Software Development Methodologies (DIT347), Project: Cyber Physical Systems and Systems of Systems (DIT638), and Startups and Industrial Software Product Management (DIT834). The progression of management through all of the above listed courses as well as their utilization is not explicitly described in their respective course syllabus.

It is important that the first course (DIT092) that introduce project management and the management subject is well designed and planned in order for the students to learn the basics of project management and the management subject. In particular since the progression of learning management shall be based on the knowledge from this course. Therefore, we will look into how DIT092 is currently designed and what theories and topics are covered in the course, and to identify potential improvements.

Action Point 1: Organize meetings with the teachers of all of the above listed courses to investigate how the management subject and its utilization can be made explicit in the course syllabuses.

Responsible role/function: Program Manager of NISOF (Richard Bertsson Svensson)

Expected to be implemented: Spring 2020

Action Point 2: Look into the design of DIT092 and identify potential improvements. This will be done together with the teacher of DIT092 and the teacher that conducts research in management. We will also talk to researchers at GU that teach and conduct research in management subjects to get input and inspiration of how/if we can improve the course.

Responsible role/function: Program Manager of NISOF (Richard Bertsson Svensson)

Expected to be implemented: Spring 2020.

Action Point 3: Ask a researcher/teacher in management to review the progression of management subjects in NISOF.

Responsible role/function: Program Manager of NISOF (Richard Bertsson Svensson)

Expected to be implemented: Spring 2020

Project courses

Recommendation 13: Discuss the balance between project and theory courses

"The evaluation committee recommends the faculty to initiate a discussion of the balance between the relatively many project courses and theory courses. Project courses can be excellent to train the practice of Software Engineering, so the discussion should focus on the volume and role of this training rather than the number of courses."

We followed the evaluation committee's recommendation to initiate a discussion of the balance between the project and theory courses in NISOF. After the discussion, the conclusion was that we should keep the number, and the volume of the mandatory project courses as it is today in NISOF. That is, we will keep the four mandatory projects, three mini projects of 7.5 credits each and one project of 15 credits. There were several reasons for keeping the projects in NISOF. One reason is, as pointed out by the evaluation committee, project courses can be excellent (if the vulnerabilities of project-based learning

can be controlled, see Recommendation 15) to train the practice of Software Engineering. Another reason is that having a project course in each semester gives the students the opportunity to apply the theoretical knowledge they gained in their previous courses in practice.

Since we decided to keep the project courses in NISOF, we will work on improving the project courses and to control the vulnerabilities of project-based learning. How this will be done is described in Recommendation 14, 15, and 16. Moreover, the management subject in NISOF will also affect the project courses. The action points for improving the progression in management in the project courses are described in Recommendation 12.

Action Point: Analyze and discuss the balance of having two project courses in Term 5 (optional courses for NISOF).

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Fall 2019

Recommendation 14: Means to follow progression of individual students in project courses

"The large amount of project courses makes it hard to follow the progress of the individual students and provide individual examination."

"When a conscious strategy is formulated [from Recommendation: 13], work in finding learning outcomes and means to follow the progression of the individual students can be initiated."

We agree with the evaluation committee that this is important to address. We will create a questionnaire with focus on individual progression and grading in group work that will be sent out to our students to get their perspective and feedback. Then, we will use this result as input to a discussion among the teachers at NISOF on what strategies for individual grading and progression of individual students can be used, and are perceived as fair among both teachers and students. Finally, the information about individual grading and progression of individual students needs to be written in the official course syllabus and the official course PM (we need to find the right balance between information in the syllabus and the course PM).

Action Point 1: Create, distribute, and analyze the results of the questionnaire focusing on individual progression and grading in group work.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Spring 2020

Action Point 2: Initiate a discussion among teachers about individual progression and grading in group work.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Spring 2020

Action Point 3: Update course syllabus and course PM. The program manager will be responsible for this task, but the actual updates will be written by the examiner/course responsible.

Responsible role/function: Program Manager of NISO (Richard Berntsson Svensson)

Expected to be implemented: Spring 2020

Recommendation 15: Control potential vulnerabilities of project-based learning

"Project-based learning poses several challenges on the students and teachers. It is often less clear for students what the expectations are and how the assessment is conducted. Many students also raise concerns regarding teacher biases. From the teacher perspective, similar concerns arise. It is challenging to develop and execute a transparent assessment on an individual basis. That often requires more effort monitoring project teams frequently, often several times a day. If the program manages to control all potential vulnerabilities that come from project-based learning it is an effective way to teach software engineering practice and train abilities and skills. However, there are several pitfalls must be avoided and project-based learning require that teachers, in particular, are on high-alert for the duration of the projects."

We agree with the evaluation committee that this is important to address, especially since we decided (see Recommendation 13) to keep the four mandatory project courses in NISO. As the evaluation committee pointed out, there are many potential vulnerabilities of project-based learning that must be addressed. In order to identify the vulnerabilities and to identify strategies for how to address them in our project courses, we need to investigate this.

Action Point: Identify vulnerabilities of project-based learning and identify strategies of how to overcome them.

Responsible role/function: Program Manager of NISO (Richard Berntsson Svensson)

Required resources: 80 hours

Expected to be implemented: Spring 2020

Recommendation 16: Add theoretical foundations in the project courses

"The theoretical foundation is not sufficiently provided on the "project" courses, such as core concepts, principles, and methods, and therefore academic progression is not fully satisfactory as appointed by the students; while the practical value is appreciated. A recommendation is to improve these courses by giving core theoretical foundations about the practices being done on the courses."

We agree with the evaluation committee. Project courses should provide students with the necessary concepts, principles, methods, and theories to enable academic progression. Therefore, we will further investigate this to see what is missing in the project courses with respect to theoretical foundations.

Action Point: Review the project courses in terms of course syllabus, course PM, course literature, and lectures to identify improvements with respect to providing students with the core theoretical foundations about the practices being done in the courses. This will be done together with the respective teacher for each project course.

Responsible role/function: Program Manager of NISO (Richard Berntsson Svensson)

Expected to be implemented: Spring 2020

Course evaluations

Recommendation 17: Student union organize the course evaluations for a set of related study programs

“A suggestion for the future would be that the student union organizes the course evaluations for a set of related study programs. It’s probably better if course representatives are elected by their fellow students and meet a few times per year to share their impressions and develop the feedback to GU together. This way the students can follow-up on the input they give and the students will be more motivated to contribute to the long-term development of the program.”

This is a good suggestion from the evaluation committee. We do not have any strategy meetings for NISOF with any students from NISOF or from the student union where we discuss the long-term development of NISOF or strategic improvements. We believe that this is important and therefore we will look into how such a setup can look like and who (students of NISOF, student union representatives who have a broader overview of several programs, teachers, industry representatives) should be involved. Such a group could meet once each semester. Moreover, we do not have a systematic internal program evaluation, which is something that we will implement. This internal program evaluation could, once it is in place, be handed over to the student union.

Action Point 1: Investigate and setup a representative group for strategy meetings and long-term development of NISOF. This includes contacting the students of NISOF and GU student union to see if there is an interest to form such a group.

Responsible role/function: Program Manager of NISOF (Richard Bertsson Svensson)

Expected to be implemented: Fall 2019

Action Point 2: Create an internal program evaluation of NISOF

Responsible role/function: Program Manager of NISOF (Richard Bertsson Svensson)

Expected to be implemented: Fall 2019

Recommendation 18: Add incentives for students to perform course evaluations

“The incentives for performing evaluations are missing, according to the students.”

We have a low response rate in our course evaluations. This is partly due to lack of incentives for performing course evaluations, partly due to lack of information about the course evaluations in terms of the importance of performing them and what we do with the results, and partly due to the current structure and set of questions that are asked in the course evaluations.

Regarding lack of incentives for performing course evaluations, one important aspect to show students that the course evaluation results are important and that we use the results to improve the courses is to present the results, proposed changes, and changes made based on the course evaluations to next-year students. This is addressed in Recommendation 19.

To increase the response rate, besides presenting the results to next-year students, we believe that the teachers in the courses needs to (repeatedly throughout the course) remind the students about the course evaluation and explain the importance of performing the course evaluation. We also think that the student union can inform the students of the importance of performing the course evaluation.

Regarding the current structure and set of questions in the official course evaluation. The current course evaluation and the questions asked do not really focus on students learning, the organization of the course, or how the teacher teaches and approaches the students. Therefore, for some courses in NISOF during 2018/2019 we used, as part of a pilot study, an additional course evaluation that is based on Students' Evaluation of Educational Quality (SEEQ). In this course evaluation we used Likert-Scale questions (from Strongly Disagree to Strongly Agree) together with two open questions (What are the three best things about the course, and what are the three things you liked the least about the course). The SEEQ course evaluation was handed out in the last or second last lecture of the course. The response rate was much higher compared to previous year's official course evaluation, we captured all the important feedback from the official course evaluations and a lot more feedback (we compared the official course evaluation and the SEEQ from the same year). Moreover, when we asked the student representatives in the final course evaluation meeting which course evaluation they preferred, the answer was the SEEQ. After a few courses with SEEQ we discovered that we needed to add a few questions to SEEQ, which we have implemented.

When we used the SEEQ course evaluation, we identified three main improvements compared to the official course evaluations. First, the response rate is higher when using SEEQ compared to the official course evaluation. A higher response rate provides us with a better understanding of what really happened in the course. When using the official course evaluation, we often have a response rate between 2 and 10 students, which does not show what the general opinion among the students was. Second, we receive more valuable and detailed feedback from SEEQ compared to the official course evaluation. This gives us a better understanding of what parts of the course worked well, and what needs to be improved. Thus, we receive feedback that can be used to improve the course for next-year students. Third, the students preferred the SEEQ over the official course evaluation.

Action Point 1: Contact teachers and GU student union to discuss how we can inform students to perform course evaluations.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Fall 2019

Action Point 2: Use the updated SEEQ course evaluation in all NISOF courses.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Fall 2019

Action Point 3: Discuss the way we perform course evaluations at the IT Faculty and CSE. This discussion should include pros and cons of the current course evaluation and alternative course evaluations (e.g. SEEQ) to increase the response rate and to get more valuable feedback for improving the courses. In addition, we need to discuss if all programs and courses at the IT Faculty and at CSE must use the same course evaluation and course evaluation questions. All relevant stakeholders will be invited to this discussion.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Spring 2020

Recommendation 19: Systematically present final review/proposed changes to next-year students

"The final reviews/proposed changes are not systematically presented to next-year students, i.e. some teachers inform about them, and some not. This should be ensured for all the courses."

We have guidelines and information for teachers about what to do before a course starts, during the course, and after the course has finished. These guidelines and information states that the teacher (course responsible) shall inform the students about what has changed from the previous time the course was given. This shall be done on the first lecture (the introduction) of the course. However, it does not explicitly state that the teacher shall base the information about changes on the course evaluation results from the last time the course was given. We agree that it is important to systematically communicate the results and proposed changes from the course evaluations to next-year students.

Action Point 1: Update the guidelines and information for teachers to include changes based on the course evaluation results from the last time the course was given.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Fall 2019

Action Point 2: Add a section called "Changes made since last occasion" in the course PM template.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Fall 2019

Action Point 3: Add the course evaluation results, from the last time the course was given, to the course web page in Canvas.

Responsible role/function: Student office

Expected to be implemented: Spring 2020 (this will be an ongoing process for each course that starts in each study period. Expected to be implemented refers to when this is done for the first set of courses).

Action Point 4: Inform all teachers about these changes (Action Points 1-3 above) to make sure that everyone knows about it and can implement it in their courses.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Fall 2019

Study environment

Improvement 3: Improve physical space

“The physical space is satisfying. Some limitations refer to the rooms’ capacity (max ~100 students), and to limited access to some all-purpose and meeting-type rooms for the GU students compared to Chalmers students.”

Although the evaluation committee concluded that the physical space is satisfying, based on our own observations, discussions with our current students, the results from our course evaluations, and input from Göta (student union) during the IT Faculty’s pedagogical workshops during the spring of 2019, the physical space on the second floor in the Patricia building at Campus Lindholmen needs improvements.

The second floor in the Patricia building at Campus Lindholmen is the only physical space we have for the NISOF students. This is where we have all the lectures (room Alfons), all exercises/labs (room Mållgan) and the study rooms for our students.

We need to look into the quality of our technical equipment in especially Alfons and Mållgan. The feedback that we have received is that the projectors have low quality which makes it difficult for the students to see the slides clearly. We also need to look into the maintenance of furniture in all rooms, including the students’ study rooms. Also, we need to look into if it is possible to have the room Mållgan designed as an active learning room (to improve students learning). Finally, the study rooms need to be looked into to see what improvements are needed. Both our students and the student union have asked for reading places (where students can sit-down and standup) in some of the study rooms on the second floor in the Patricia building,

Action point: Investigate what needs to be improved in the physical space and how much it will cost.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Fall 2019

Recommendation 20: Different IT-platforms for GU and Chalmers which complicates the access to information

“There are different IT-platforms for GU and Chalmers which complicates the access of information and communication for the students. IT resources in general, such as network, computer labs are not brought up as a problem during interviews.”

We (CSE) are continuously working on improving the access of information and communication for the students. We used to have different IT-platform for courses, at GU we used the Learning Management System (LMS) GUL while Chalmers used the LMS PingPong. However, GU and Chalmers have co-introduce Canvas as a substitute for GUL and PingPong. Meaning, the students, regardless if they are Chalmers or GU students, will be able to access all of their courses and the information about the courses via the same system, including the communication with teachers.

Action Point: Monitor the implementation of Canvas and communication with students via Canvas.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Spring 2020

Recommendation 21: Improve help/information about practical things and study environment for international students

“International students require much help in the beginning, both with practical things and the study environment.”

We agree with the evaluation committee. It is important for all students, and in particular international students to understand the study environment at GU and in Sweden. We extended our introduction day for new students to three introduction days. By doing this, we created more space to inform students (before the semester starts) about university studies at GU and in Sweden, the study environment and how the educational system work. This has already been implemented and the information was given, by the Program Manager for NISOF and the Study Counsellor, to the students in August (28-30th) 2019.

To help the international students with practical things, last year (fall 2018) our study counsellor (Tina Mathé) had a test run of a Fika session. This Fika session was scheduled for one hour every week during the first study period where the international students could show up, have some Fika (coffee with buns/biscuits) and talk about practical things, e.g. where to buy things for their homes, where to find a pharmacy etc. This was well received by the international students. Therefore, we will implement this Fika session for the fall of 2019 with one session every week in the first study period.

Action Point: Setup and run Fika session once a week during study period 1, fall 2019

Responsible role/function: Study Counsellor (Tina Mathé)

Required resources: 5000 SEK (for coffee, buns/biscuits during the fall of 2019)

Expected to be implemented: September 2019

Student engagement

Recommendation 22: Improve students' engagement during courses

“Students' responsibilities should be improved to systematically engage students, in the form of a representative group, in the follow-up of each and every course; currently, this involvement is not systematic.”

“Students' expectations are to be more engaged during teaching sessions, in different ways, as well as to have better-functioning contacts with the course teachers for Q&A.”

In every course we have student representatives. The student representatives consist of a group of students that either volunteered to be a student representative or were randomly selected if not enough students volunteered. This gives every student the opportunity to actively participate. The student representatives are the ones that shall attend the final course evaluation meeting where the results from the course evaluation are discussed. This is described in our process for course evaluations and it is done in a systematic way for all courses. Thus, we consider this recommendation (the first part) to be implemented and no further action is needed.

Regarding students' expectations to be more engaged during the teaching sessions. The level of engagement depends on the pedagogical approach/choice made by the examiner/course responsible, and it also depends on the teacher and their preferred style of teaching. This is a decision for the examiner/course responsible. However, it is important that the students feel that they can contact the

teachers for Q&A during the course, and that the students know how to do that. In order to find out about communication gaps, and to improve the communication between students and teachers, we need to investigate this.

Action Point: Investigate student-teacher communication gaps

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson) and Study counselor (Tina Mathé)

Expected to be implemented: Spring 2020

Recommendation 23: Have a mechanism for student course representatives to contact and convey feedback during the courses

"In a majority of the courses, the student course representatives can make contact and convey feedback during the course, i.e. not only on completion. This should be ensured as a functioning mechanism for all the courses."

As explained in Recommendation 22, we have student representatives for all courses in NISOF and we have a process for our course evaluations. In the process description for the course evolutions it is written that the course responsible shall meet with the student representatives about half way through the course to receive feedback, discuss what works well and what could be improved. Moreover, the student representatives (or any student in the course) can contact the teachers during the course to convey feedback. As part of the action point for Recommendation 22 (Investigate student-teacher communication gaps), we will include the communication between student representatives and the teacher for conveying feedback during the course.

Action Point: Remind all teachers about the half way meeting with the student representatives and follow-up.

Responsible role/function: Program Manager of NISOF (Richard Berntsson Svensson)

Expected to be implemented: Spring 2020
