UNIVERSITEIT TWENTE.

FACULTEIT ELEKTROTECHNIEK WISKUNDE & INFORMATICA
DATUM
04 March 2019
OUR SIGNATURE
EWI18/BOZ/8175

Concept MINUTES OF THE PROGRAMME COMMITTEE-S&C MEETING
04 March 2019 12.30 hr.

Present: Ronald Aarts (Chairman), Maarten Korsten (Master coordinator), Edwin van Boven (student), Mitul Agrawal (student), Atul Hari (student), Jan Willem Polderman (Program Director), Franscesco Nex (assistant professor), Sarthak Misra (via Skype), Chantal Molenwijk (replaces Hugo Masselink), Laura Bosdriesz (minutes)
Absent: None

1. Opening
Start of the meeting at 12:39 hr.

2. Announcements
- New members: F. Nex and R.G.K.M. Aarts
- Perspectives on Engineering Design

Information about the course is received and it was already discussed in the previous meeting. Since Aarts is new in the OLC, he was not sure what the meaning was to put it in the announcements. Korsten mentions that the situation regarding this course is a bit complicated. It is an electrical engineering course and the educational committee of EE accepted this, but the OLC would like to send it to the System and Control program committee, because it is a core course. The SC program needs to let them know if they still think if this is a suitable course for the core program. Aarts responds that this is more than an announcement, and there needs to be a discussion about it. Polderman was a bit confused what this point was about. Aarts responds that it was about the module/course information form and the final assignment including some important notes. Van Boven mentioned that it was already discussed last meeting, so there is some confusion about what to do with it. The document did not change that much, it was only a little bit more detailed. The conclusion is that discussing it in the minutes will be fine.

There were no other announcements.

3. Minutes meeting October 29th 2018
Page 1: Polderman has a remark regarding the presence. There is a name similar to his name, was absent without notice. Van Boven mentioned that Polderman was present, but a bit late (11.13). Jan-Willem Pol needs to be removed from the minutes.

Furthermore, Van Boven mentioned that the time limit mark and integration project and zip was also discussed in that meeting. Aarts agrees and says that it seems to be from the minutes before last minutes, and that it was discussed during last meeting. Van Boven adds that there was still a point of action related to this discussion. It is still on the action list so it can be discussed during the action points on page 4.

Page 2: -

Page 3: This page discussed the Engineering and design perspectives, which was also discussed last time. It was an action point that Van Dijk had to give a positive advice to the program director. Aarts asks if there is a reason to discuss it since it already has been discussed last time. Van Boven answers that it was changed a bit and that it was now about altering from the UT research groups, that students have to come by to check if they searched appropriate papers and ask for approval. Aarts guesses that the lecturers have some ideas

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about it and summarizes that the responsibility is now at those certain research groups and not only from the lecturer. Van Boven wonders whether those people are aware about their responsibility. Polderman assumes the lecturer has ideas about it, but that it should be checked that responsible people realize that they are responsible for checking articles that students come up with. **AP Korsten.**
Aarts concludes that it was more a procedural point of discussion and not a content related discussion of this document.

In response to the action item (nr. 8) on page 3:
Aarts mentions that action point 8 is on old standing one (from 2013) that is still ongoing. The question what the problem is here comes up and Korsten responds that De Willigen can give contribution to the literature search during the graduation project. Polderman replies that she does that for other programs as well, as for example Applied Mathematics, but is not sure what has to be done for this action point. Korsten replies that she had to check what indeed was possible. Leave it on the list and figure out what to do with it. **AP Korsten.**
Polderman states that it is a good idea to check if it can be done and otherwise remove it, since it is already on the action point list for five years.

In response to the action items on page 4:
65: Aarts concludes that the action has not been taken because it is not on the agenda for this meeting. Questioned if it is still considered to be an issue on the agenda? Agrawal answered that at least the reverse order internship and graduation project as possible choice would be very good. If they have the choice it is better to do a graduation project first and eventually do an internship, because some companies require, when doing an internship, to do the graduation project with them and then have the choice to continue. If this kind of choice is possible, it is better to do the graduation project first and then go for an internship. Aarts proposes to put it on the agenda for next meeting. Korsten adds to this point that a decent proposal should be available for the discussion. According to Van Boven it was proposed by the exam committee. There was a student who did it the reversed order and asked for permission, which had to be discussed in both the exam and program committee. This discussion should be prepared by the management team. **AP Korsten and Management Team.**
Aarts and Korsten agree that the management team first needs to check if this is desirable, and if so, they can ask the OLC for advice. Korsten asks Agrawal if the scenario he described happens a lot? According to Agrawal it happens quite often that when they ask for an internship, they offer a graduation project, can train student longer, and have a proper judgement. Korsten mentions that the graduation program normally is internal. It is supervised by one of the faculty members. Korsten understood that students can only come for a graduation project and not for an internship. Agrawal explains that the companies require more time than the time for an internship, and then have a change for continuation after the internship. Hari adds that basically the companies feel like you have a break after the internship, your graduation project, after which you can go back to the company. There is a discussion about what the point is of those companies and what is desirable for both the students and the companies. Companies want a better return on their investments, by having students staying after their internship. Students can transform their graduation project in an employment. Polderman mentions that they will discuss it in the management team and that it is important to reconstruct what and why the order is as it is. Most master programs have an internship first and then their graduation project. Polderman thinks that the purpose of the internship is to get acquainted with subjects from the outside world. You can do better if you have more prior knowledge, so in that sense there is no objective to have the graduation project before the internship. Aarts says that the internship should not have severe drawbacks if you first do your graduation project. The question is what the problems are if you do it in the normal way, because here prior knowledge is preferable as well. Polderman adds that he never heard it before: that it is easier to find graduation projects then internships. Hari responds that this was the general response they got on the phone when looking for an internship. Aarts mentions that a different topic came up: doing a graduation project in a company, which is not the same as doing the internship and graduation project in the reversed order. Hari again mentions the possibility to extend for some companies. Aarts agrees and states that internships are too short for some companies but thinks that it is their

problem. There are many other companies left. Polderman also mentions another option which is to make graduation and internship 30 – 30 EC instead of 40 – 20 EC. Hari rejects to this. He also mentions that doing the graduation project at the university is good for the quality, in terms of the supervision. Skills from the graduation project can be very helpful for the internship. Agrawal adds that this gives problems for international students in terms of visa and monthly fees. Then you change from study to work and that is hard with the Visa, because you are here for study and not for work. Polderman responds that companies should pay for those if they really want to have you.
Korsten concludes that they will discuss everything in the management team and that they will also ask students about the situation to write to the management team. **AP Agrawal**.
They will also look at few more aspects: Internship before graduation project also offers the possibility to look around and not directly accept the first company offer.

56 - Time limit marking: van Boven asked what did change? Aarts responded that in principal nothing is new. It is nice to hear that it works, since people know it. Van Boven mentioned that the exam committee give a lot of exception because students were not allowed to do their internship and/or graduation project because they had not finished their integration project yet. Molenwijk thinks this does not have to do a lot with the time limit marking. It also has to do with the time limits in which students hand in the project. Van Boven replies that some students hand it in in the summer vacation and expect a grade very fast which is impossible in this time period. The time limit can help in cases where students handle in their graduation assignments in the summer vacation. A suggestion by Aarts is to say in a document: if you handle in your project before a specific date, you can expect a grade on before a specific date as guarantee. Aarts concludes that it is clear and that it does not have to be put on the agenda again.
Polderman wants to go back to the point. This Wednesday is the new MT meeting, so the students have to send their document today or tomorrow.

57: Aarts ask if the chairman did the action point and if it has to stay on the agenda? Van Boven replies that his point is repeated often. According to Polderman this training about duties and rights is recommended to new members. Aarts asks if this is arranged by the university. Polderman replies that CELT organizes it. It is a full day course. He proposes to put it next time on the agenda, with no strings attached. Aarts is going to check if there is a course organized by university. **AP Aarts**. Polderman is going to check with Frank van den Berg. **AP Polderman.**

58: Aarts asks if the advice is given. This is not the case so it should stay on the agenda **[AP chairman].**
Aarts ask if the chairman is writing the letters himself or someone else. Polderman thinks it is approved and constructed by the chairman.

Minutes of 29th of October 2018 are approved.

4. Report and Decision NVAO – Accreditation M-S&C

The decision was positive. There was a 70-page report added to that. Polderman makes a remark that previous meeting they already had the concept of the report and the final report is not much different than the concept. It is more for information, but at some point Polderman would appreciate an advice from the program committee about where the emphasize should be for example. Aarts mainly focused on the recommendations.
Agrawal has a remark on page 3, the first paragraph, last line, which he does not agree on: “Although many internships are abroad, the panel advises to promote students taking parts of the curriculum abroad”. Polderman thinks they can still encourage students to do that, even if they are international students, but they are not going to force it. Van Boven thinks they are not very motivated to do it abroad. Korsten mentions that this part is not only about internships but also about courses, but that it is not attractive for international students because they are already studying abroad.

Aarts is going to continue to page 17 (the recommendations):

- ***To broaden the intended learning outcomes with aspects of signal processing, communication and computation.***

Korsten mentions that they have trouble with that. There is another master program, embedded system and EE, making it a bit troublesome. Agrawal says that more emphasis on signal processing and communication would make it better. Currently, there is signal processing in a side course and the integration project only. There is control systems, and systems, but there need to be more inheritance. They know how to do computations and simulation, but when it comes to the programming part, they have no experience in the language. Sometimes companies say there is a basic requirement of Python, they can only say they can learn it but they don't know it. Aarts says it is not the core of the program, but it can help, so there should be a balance in that. Polderman replies that it always goes in the cost of something. If the program committee strongly advices to take this into account, it is also important to know at the cost of what?

Polderman thinks that programming skills are more prerequisites for the whole program instead of something you develop during your master's program. Most bachelor programs offer programming skills. Agrawal says that they have the pre-knowledge but that everything changes so fast, that the knowledge is not sufficient. It is questioned what to advice. Polderman mentions that you could also think about something completely different, like offering some extra curriculum facilities. Van Boven adds that you could also integrate it in the integration project. Aarts responds that he also thought about it, but that in this project you apply things that are learned elsewhere. It is not the right place to learn new skills.

Polderman says this point is there so it has to be taken seriously. Korsten adds that it has to be realized that students cannot be expected to have knowledge about subjects that are not taught. Nex does not agree and asks why this is not the case. There exist so many languages that it is difficult to be ready for it. Aarts says you can think about basic programming skills, irrespective of the specific language. Agrawal: comes up with an idea to divide a course with the main simulations in MatLab and the setup in Python/ROS. If we integrate it in this way there is not too much time spend to learn it, but can it still be used during the project. This is like the setup of the Modern Robotics course. Polderman responds that the audit committee says that the intended learning outcome need to be broadened, and that is more than using something without knowing it. Aarts concludes that this point needs to be elaborately thought about. He proposes to spend a dedicated meeting to this point. Polderman says this point is the most difficult one.

- ***To install an advisory board, to allow the program to align with trends and developments in the professional field.***

Polderman is working on this, also for Applied Mathematics. There is a list of names and an invitation letter for potential members of this committee. It is a good idea to send this to the program committee at the next meeting. **AP Polderman**. He is questioning how to make it attractive for invited people to join the advisory board, since this means more work for them to do. It needs to be added to the agenda for next meeting.

- ***To promote students with University of Twente Bachelors Mechanical Engineering, Electrical Engineering or Applied Mathematics to enter this program.***

Polderman does not wants to do it and gives an explanation why not. He wants to inform the students, but for UT it does not matter if someone gets his EE degree or his S&C degree. There is limited time and he prefers to spend time on getting students that they otherwise would not get. From the other point of view, Aarts mentions that there are Mechanical Engineering students that are aware and want to know more about the S&C program. Korsten says that the university is more involved in giving the students more information than for the standard programs. Not to make propaganda, but just to inform students. Polderman says that from the university point of view, they would embrace it, because also students are leaving because they go to different universities. However, this should not be prevented because this is the principle of the complete Bachelor/Master construction.

- ***To extend the core curriculum, now being 20 EC.***

Polderman says that the background of this point is in the view of the audit committee, a fundamental subject is missed. In Eindhoven and Delft, they have this subject, where Polderman did not fully agree on, but they lost the discussion. This is a point that needs to be investigated carefully. It is addressed in the mail of the exam committee. It is more or less an attention point. Polderman addresses that it is related to the next points.

- ***To include an additional course on control theory in the core curriculum.***

- ***To introduce an experimental set-up in the integration project course.***

Aarts already discussed this with Hakvoort before reading it. There are some plans for that in another course. It is more a practical issue, but there might be a solution for. It is used to be in the project but just disappeared several years ago.

- ***To try and spread students more evenly over the specialisations, and increase the cohesion of the specialisations.***

Hari checks if they mean here before the admission takes place. Korsten answers: when you choose a specialization, in the first stage you do it before you have been admitted, but you might even change your plans here, and finally the majority of people from systems and control graduates in robotics and mechatronics. Hari mentions that many people from the UB track changes to RAM because of the precise of students because of this. The course was new and it was unsure what the outcome was. According to Polderman action needs to be taken on this. They are already working on this together with the communication people. Agrawal says about the part of increasing the part of the cohesion of the three different specializations, that even after taking the core plus some extra courses, he knows how the specializations, but still has no clue how the biomedical would look like. Polderman observed this critical point also during the audit where people of different specializations sit together. His plan is to organize conference afternoons with all the people involved in system and control to enhance the cohesion. The involvement of ITC is something that some people don't even know. Agrawal was hesitant to think about biomedical because he did not know a lot about this option. Polderman mentions that they do a lot, like masters open day with all four specializations presenting themselves. During the open days there is always is a visit to the laboratory, which is the RAM lab since it is very exciting. Last time there were also visit to other labs as well to show that interesting things happen there as well. Polderman asks for the providing of equipment in the other lab, so students can touch on those specializations. Nex is presenting during next week's masters open day. Hari says that an option would be to repeat the introduction program. Aarts replies that those introductions can be repeated twice a year to freshen student's mind. Polderman adds that this discussion is very close to the next point.

- ***To ensure all students being introduced to the multidisciplinary dimensions of the systems and control domain.***

Agrawal says that more interaction between seniors, freshman and the winter semester students, can be helpful. They can explain more about courses and tracks and what choices to make. Aarts mentions the importance to make something like this attractive for all those groups otherwise people don't show up. Agrawal says that if seniors are involved with a specific target, they can do a lot more, and make things less colored then during open days. Aarts replies that this is also related to the point below: try to promote the internships and graduation projects, which are run. Polderman replies on this by saying that the culture in specializations is different. In RAM they don't want to have a graduation project within a company. Hari asks about the existence of an exhibition with the graduation projects. Aarts replies that there is a canvas site for students who are enrolled, that offers all available graduation projects for the whole department. Korsten adds that there is a Canvas site for S&C, but that there is not much content. This can be an idea. What Hari meant was more from a demonstration point of view, which is more than a canvas site. Korsten says that students should investigate the websites of research groups, where graduations projects are online. However, those are only visible when

you are enrolled in Canvas. Nex proposes to organize one dedicated day to have every group showing their topic.

- ***To schedule either the internship or the graduation project at companies, to allow students to become acquainted with the professional field.***

Already discussed shortly.

- ***To promote students taking part of the curriculum abroad.***

Already discussed shortly.

- ***To improve the student success rates.***

Already discussed shortly.

5. Master TER S&C

Aarts says that the report has to be discussed in more detail next meeting when done with all TER's. When they look at the scheme, the main message is that it will be discussed the 9th of April. Polderman asks if many changes are to be expected? Korsten replies that no main big changes are expected. There can be some changes regarding the setup, but not regarding the topic. Molenwijk asks for more information about the course Advanced Programming, because it won't be in the program anymore next year. Korsten answers that rumors are round that this course will disappear and be replaced to programming for biomedical engineering. It will be taught by the same lecturer. There is no official announcement about this, however this is also necessary for the TER. Aarts adds that there are also changes in mechanical engineering, that can affect some courses. Some specification/specializations tracks will be introduced. For systems and control the most relevant one is the Robotics and Mechatronics specialization (from mechanical engineering), where some of the elective courses are going to change. There need to be checked if there are matching courses and new courses that are relevant for system and control. **AP Aarts.**

Van Boven has a remark about the current TER, which is not available on the site of Systems and Control. According to Polderman it is there: EEMCS → education → rules and regulations. Korsten thinks that there should also be a link on the System and Controls site. Polderman does not agree on that, because that decreases the uniformity of the EEMCS. Molenwijk suggests having a link to this website, but that can be dangerous because of aging links that are non-existing anymore. Van Boven mentions a link to EEMCS in general but Polderman does not see the relevance, because S&C is part of EEMCS. Van Boven is afraid that none of the students is ever able to find the TER. No students go directly to the EEMCS website. Polderman thinks it should not be solved by ad hoc links. On the website of system and control there are links, but they don't work. When the structure of the faculty pages changes, this happens.
Korsten replies that when there are dead links, you must let him know.

Molenwijk has a final remark. She had a schedule for the faculty council and the OLC. She thought the deadline from the faculty council to receive a letter from the PC was on the 9th of April. There was some confusion, but the main thought that the deadline was not that early.
Aarts mentions how he reads the dates: it should be submitted before the first discussion on the 2th May. Then the idea is to discuss it program committee on April the 9th.

It is very confusing, but the conclusion is:
2nd of May: test should be submitted to the faculty board. Discuss April the 9th in the OLC.

6. Extra agenda point: Mail with questions

Background:
There should be discussed about the content of control-oriented courses, which is quite limited in the compulsory list. The remark is that usually this will not be a problem because no professor will agree with some program when there is no sufficient control. It is advisable to make it more

explicit. At the moment, the exam committee has to approve every study program, while it would be easier to have some general rules, so they don't explicitly have to approve every program. Does the OLC see possibilities in clearly stating the control of study programs?

Polderman says it is in line with wat the audit committee mentions. The OLC appreciates the idea, but the question is how to implement this. For example, by making lists with control and design courses from which you have to choose a percentage in order to have an approved course list. Polderman replies that it would probably not satisfy the requirements of the audit committee; they want a specific course with the fundamentals of S&C. They have the feeling that System and Control engineering fulfils that purpose, but this is only 5 EC and has the wrong name. Polderman says that if it is only the name and not the content that is the problem, then the idea of Aarts can be followed. Aarts adds that it can also help to have a list with programs that have been approved by the exam committee available.
Korsten can imagine that people from the control subject can be asked to consider what kind of courses are available and to come up with a proposal for an extension. If you have some kind of extended core program, the program mentor can approve as well. Aarts concludes that it can be a good idea to check which courses meet criteria to be approved by the exam committee. Misra adds that this is not a complete conclusion yet. He suggests sending a mail together after the meeting. More bullet points cannot directly be answered, except from the one about Basic Machine Learning, that can be an elective. Aarts mentions the remark about this course that it is not on the list of electives. The examination board only approves programs that include one of two courses that are not on the list. Korsten says that Misra his question is why it should be on the list, what does it have to do with S&C. Aarts concludes that a question has to be send as a response to the mail with the initial question. Polderman adds a remark about this being the responsibility of the program committee, and not that of the examination board. The discussion will be stopped here and for now enough input for the TER should be collected for next time, like the learning goals of this course.

7. A.o.b. and Questions

Molenwijk asks if the time for next meeting is okay or that it should be changed. Conclusion is that the next meeting is at 12.00.
Polderman says that he got reply from Frank van den Berg. Course from program committee member, negotiable what kind of course. Something for next meeting, what we like to have. Program committee as a whole, and also involve some team building.

There are no further questions.

8. Closure

End of the meeting at 14:10

Action items

No	Description	From meeting	Responsible
8	Consult De Willigen about literature assignment, involve EE in this	10/4/2013	M-coordinator (Korsten)
56	Put the item: Reverse order Internship and Graduation project, on the agenda	04/03/2019	Chairman (?)
57	Check if there will be a second training session organised by the University	04/03/2019	Chairman (Aarts)
58	Give a positive advice for Epistemological Perspectives on Engineering Design Processes to the Program Director	29/10/2018	Chairman (?)
59	Prepare discussion about the reverse order Internship and Graduation	04/03/2019	Korsten & Management team

60	Write an email about the situation regarding the reverse order Internship and Graduation	04/03/2019	Student (Agrawal)
61	Check with Frank van den Berg if there will be a second training session	04/03/2019	Program Director (Polderman)
62	Check that responsible people from research realize that they are responsible for approving student's articles	04/03/2019	M-coordinator (Korsten)
63	Send the list of names and invitation letter for potential members of the advisory board to the program committee	04/03/2019	Program Director (Polderman)
64	Check if relevant courses from the Robotics and Mechatronics specialization (Mechanical Engineering) are matching or that there are new courses relevant for S&C	04/03/2019	Chairman (Aarts)

Completed action items

No	Description	From meeting	Responsible
43	Add to the EER that students can individually have compulsory subjects changed	12/4/2017	M-coordinator (Korsten)
49	Write and advice to the Management Team about looking for a solution on scheduling problems for February-entrants	29/11/2017	Chairman (Van Dijk)
52	Check if there will be a second training session ("Wet versterking Bestuurskracht")	18/4/2018	Van Der Kooij
53	Write an advice based on the comments made during this meeting about the TER	18/4/2018	Chairman (Van Dijk)
54	Process the comments made on section A & B of the TER	18/4/2018	M-coordinator (Korsten)
55	Ask Gjerrit why the examination wanted the OLC-S&C to discuss the "Time Limit Marketing Integration Project"	18/4/2018	Program Director