UNIVERSITEIT TWENTE.

FACULTEIT ELEKTROTECHNIEK WISKUNDE & INFORMATICA

Minutes 42nd meeting PC-S&C
Thursday 12 May 2022, 13:00 – 14:30

Present: Ronald Aarts (chairman), Sarthak Misra, Francesco Nex, Maarten Korsten (programme director, PD), Jorien Berendsen (programme coordinator, PC), Alejandro Lopez Tellez, Jan Broenink (PD of the Robotics programme, present until 13:15), and Marissa Jonker (minutes maker)

Absent with notice: Vignesh Balaji Vijayan

1. **Opening**
   The chairman opens the meeting at 13:02.
   Jan Broenink can only attend the meeting for about 15 minutes. He will share some considerations about the new MSc Robotics with the PC at the beginning of the meeting, see item 3.

2. **Minutes meeting 41 on 4 April 2022**
   Minutes are approved

   Action points:
   114: Contacted both PCs and got replies. The available evaluations have been shared – action point done for now. May show up again if needed.
   116: No update, Nex doesn't expect that there are courses that need to be evaluated – action point no longer needed.
   121: Still needs to be done.
   124: This course will not be discontinued, so keep it in the table – action point done.
   125: Chairman received an email from Vijayan. He hopes to join us again in the near future – action point done.
   126: Waiting for application, see item 6b.
   127: Action point done.

3. **Announcements, incoming and outgoing mail**
   Broenink explains some actions for the MSc programme Robotics to be taken by the PC. He considers it to be important that the PC of Robotics is the same as the PC of Systems and Control. This applies in particular to the students in the PC, as there are no Robotics students yet.

   Two things need to be discussed in time:
   1. **EER-B (curriculum specific part) of MSc programme Robotics (scheduled for next meeting)**
      In the next meeting the EER-B of robotics needs to be discussed. Broenink will prepare and offer a reading advice, such that the PC can focus on the relevant things. It should

45 be noted that this is an EER for a new programme, so there is no prior EER for comparison. Broenink will outline which sources have been used for the EER including the aspects that are implemented differently.

2. **The PC needs to check all courses at the start of the program (especially compulsory courses)**

50 There are 14 compulsory courses. In the accreditation document the description of these courses is given on the Osiris course catalogue level, i.e. learning outcomes, teachers, etc.. This is a good level of detail for the PC to check the course content and scope. Broenink will provide this document and information about the structure of the curriculum. These overviews were also appreciated by the Accreditation committee. The PC is asked to study and discuss these documents.

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Aarts: From an organizational point of view, our next meeting will be dedicated to the EER-B of SC as well as the EER-B of Robotics, i.e. acting as a joint programme committee for both masters. For Robotics we then also need to look at the compulsory courses, but this may be too much for a single meeting in which case we have to schedule one more meeting before
60 the summer holiday. The EER-B has the highest priority and hence both EER-Bs will be discussed during the meeting on June 2.

Broenink will send all documents at least one week before meeting. The PC can decide to discuss only the EER-B or the courses as well.

Aarts remarks that we will then be the PC for both programmes. It is also noticed that we still
65 need one more student member, see item 6b. For the near future: Lopez Tellez will leave around October, Vijayan will leave a bit later. It would be great if at least one Robotics student could be found for one of these vacancies.

Lopez Tellez comments that it would be nice to have mentors for the CBL in the Robotics programme. Broenink answers that he will keep this in mind, and that it might be a good idea
70 to start looking for mentors.

A. **Mail from University Council about training**
Training was already in the past, so the information isn't relevant anymore, but we can keep it in mind for the future.

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B. **Mail from PD-SC about combined Final Projects**
Korsten sent email about registering combined final projects: Currently, students register for each final project which implies 40 + 40 EC. The suggestion is to implement the combined final project as one course of 60 EC. The course description can be
80 adapted to apply for both graduation projects.
Aarts asks if this implementation is made for all course combinations, or if it is done on demand. Korsten answers that it is convenient to take the most occurring combinations and put these on Osiris. If a new combination is needed, it can be added on demand.
85 Aarts asks if the implementation is also valid for cross-faculty course combinations, e.g. ME and SC? Korsten answers that then ME will have to be contacted as well to see if they agree with this procedure.

4. Master EER part A, Faculty Section
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- Schedule EER: Not need to discuss.
- Rights of consultation and consent of PC and FC: Looked at in previous meeting.
- Bachelor Guideline and Model EER 2022-2023: Not for us.
- Bachelor Accountability document EER EN: Not for us.
- Master EER-A. Faculty section 2022-2023;
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- Changes M-EER 2022-2023:
A.4.5: Examination date. Nex asks why this section was added/replaced?
This article is moved forward from A.4.7. There are no real changes regarding the content.

Proposal is agreed with. There are no comments.
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Aarts will send our advice after consultation with Misra.
→ Action 128

Part B will be discussed next meeting.

105   **5. Course evaluation reports Q1 and Q2**
From Q1:
A. 201300004 Robotics for Medical Applications
B. 201600071 Machine Learning II
C. 201800177 Deep Learning – From Theory to Practice
110   D. 191210920 Optimal Estimation in Dynamic Systems
E. 191211090 Real Time software Development
F. 191561620 Optimal Control (M-AM course)
A-F were already available shortly before the previous meeting and have been discussed briefly. No additional remarks are made now.

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G. 191561560 Systems and Control
This is a Mastermath course. The evaluation is quite positive. The method of teaching was a bit less positive, but still a 6.4. In general the grades are okay. It is not known if SC students participated as we only know how many students from the UT in total participated.

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H. 201500009 Electric Vehicle System Design (M-IDE course)
IDE uses yet another template for evaluation. Also for this course it is unknown how many SC students participated. Apart from that, the course has been evaluated quite positively.

125   For Q2 the PC-ME has been contacted about the following courses:
• 201900037 Flexible Multibody Dynamics (M-ME course)
• 201900120 Learning and adaptive control (M-ME course)

No update on this as no evaluations have been made available. Aarts will ask for these courses
130   again if there are courses to be discussed from Q3.

Korsten inquires about the evaluation system of ME. Aarts answers that they don't evaluate each course every year, only every 3 years. If a course should improve, it is evaluated again

135   the year after. Korsten suggests that we look at the most recent evaluations. Aarts will check for these evaluation reports.
→ Action 129

Korsten will add new courses for Q3, if there are any.
→ Action 130

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6. **Any other business / Questions at the end of the meeting**
    a. **Letter Korsten about curriculum & feasibility**
        Korsten expresses some concern about changes in next year's curriculum arising from the start of the MSc Robotics programme. The concern is not about courses that in
145   some cases will change, but about the time schedule that is imposed by the Robotics programme. Some compulsory courses in this program are highly relevant for the SC programme but will be given in a different quarter. In the letter it is detailed how this affects the SC programme, in particular for quarters 1B and 2B.
        In 1B the curriculum shows 10 EC compulsory SC courses which is still doable. Next to
150   the existing 5 EC of the SC courses "Perspectives on Engineering Design" and "Philosophy of Engineering: Ethics", 5 EC will be added from the (updated) course "Control System Design for Robotics".
        In 2B the curriculum is not feasible anymore as the compulsory courses add up to 15 EC. These courses are the (renewed) course "System identification with parameter
155   estimation and Machine Learning" (5 EC), "Modelling and Simulation" (5 EC) and the "Integration project" (5 EC). The latter is formally a "YEAR" course that can be done all year round, but likely students can do this only in this quarter as it requires knowledge from all previous courses. In this way all courses in 2B are compulsory courses, leaving no room for electives. This is unacceptable for the majority of
160   students starting the master in September. Hence Korsten recommends to try to change the schedule such that students can choose at least one elective course in quarter 2B.

        A proposal in the letter is to move Mod&Sim to 2A, such that two compulsory courses
165   remain in 2B, and one is moved to 2A. A problem with this change is that it doesn't help students from outside of the UT that start the programme in February, because they need the prior knowledge of Engineering System Dynamics.

        Korsten discussed this problem with Aarts and Broenink before the meeting and there
170   may be another solution: It can be arranged that students carry out the Integration Project for 90% in quarter 2A. Only a small number of questions depends on the knowledge of Mod&Sim and SiPe from quarter 2B. So the suggestion is to schedule integration project in 2A, then delay the answering of just a few questions to 2B. In this way the students only have to complete a rather small part in 2B.

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        Korsten asks an advice from the PC: Is it feasible to have the integration project in 2A, or should we move Mod&Sim to 2A?

        Lopez Tellez comments that he did the integration project in the summer. So it is
180   important that students know they should start the integration project as soon as

possible. Otherwise the students will postpone to work on it during the summer. The other option of rescheduling Mod&Sim will make it complicated for people from outside the UT to join.

185 Aarts: Regarding identification and modelling needed for the Integration Project, he is not sure how many modelling skills the students still need to learn from courses before they can work on the Integration Project. From the design course they should have enough information to get quite far. If students start in September, they would be able to do a lot already in quarter 2A. If they start in February, we cannot expect

190 from them to start with it in 2A.

Korsten asks if it is necessary for the students to follow the Control System Design course, or is bachelor course knowledge sufficient?
Aarts says it might take some extra effort, but it should be doable.

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Nex: Moving from Systems and Control to Robotics, courses have been moved to different quartiles. So we will still have an overload of courses in 2B. Should we discuss this with Broenink, at least for next year? E.g. an elective course in SC is compulsory in Robotics. There are a lot of conflicts that we should look into, also with Broenink.

200 Aarts agrees, but he is not only worried about overload of the B blocks. He points out that some of the compulsory courses are meant to be "basic courses", to be followed by an elective "advanced course". In such cases the ideal order is to have the basic part in an A block and the advanced part in the B block.

205 To conclude about the preferred option of the proposed changes in the SC curriculum, it is noted that this conclusion depends on how many students from outside the UT will start with SC in February. We cannot accommodate them if Mod&Sim is moved to 2A, and these students will have to do it the year after, which means the programme is infeasible.

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Recommendation:
It should be communicated clearly to the students that they don't have to postpone the start of the Integration Project until the end of their course year. To offer a more evenly spreading of the study load the Integration Project should then be offered in

215 *such a way that student can already work on a large part of it without having finished all compulsory courses.*
In addition, it is recommended to try to move Mod&Sim to quarter 2A in order to offer more freedom for elective courses in quarter 2B to the larger group of students. If there are students who want to join SC in February, they should be informed that the SC

220 *programme may be unfeasible for them because of assumed prior knowledge for Mod&Sim. They can consider to join the Robotics programme instead, which does not depend on this prior knowledge. In other words, we can offer these students a valid alternative.*
Aarts will formulate this in a letter.

225 → Action 131

b. 3rd student member

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Lopez Tellez talked with a student from the 1st year. He was eager to join, but he hasn't applied yet. He knows where and how to apply. We will wait one more week for his application. If he doesn't apply we can post the announcement again.

7. Closure

Chairman closes meeting at 14:09

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Next meeting: 2 June 2022 EER-B (SC and Robotics, possibly also the 14 compulsory courses)

Action points

Nr	Description	From meeting	Who
121	Send EEMCS signal value table to chairman.	28/02/2022	P-director
126	Check with Jorien what the status is with the announcement	04/04/2022	Lopez Tellez
128	Send advice on EER-A	12/05/2022	Chairman
129	Look for most recent course evaluations of ME courses.	12/05/2022	Chairman
130	Add courses to list for evaluation for Q3.	12/05/2022	P-director
131	Formulate recommendation on moving Modelling and Simulation to quartile 2A.	12/05/2022	Chairman

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