UNIVERSITEIT TWENTE.

FACULTY ELECTRICAL ENGINEERING, MATHEMATICS AND COMPUTER SCIENCE

DATE: 28 SEPTEMBER 2022
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Minutes 177th PC-AM-meeting Wednesday 22 June 2022, 12:45 – 13:30 hr. Hybrid meeting

Present: *H.G.E. Meijer(chairman), A.A. Stoorvogel(PD), J.B. Timmer(B-coordinator), L. van Dissel, K. Proksch, S.J. Geerts, L.S. Lanting, N. Luijten, F. Schuller, B. Manthey, J. Schut(M-coordinator), N.I. Muntendam*

Absent (with notice): *N. Apeldoorn (Abacus)*

1. **Opening**
   The chairman opens the meeting at 12.49.

2. **Minutes 176th meeting 7 June 2022**
   Page 6, line 244: First name of Geerts, change to his last name.
   Page 6, line 266: First name of Carlos and Pranab, change to their last names.
   Page 7, line 280: Change to "they were planning to teach that".
   With these changes, the minutes are adopted.

   Action points:
   - 436 - *Remains on the list*
   - 444 - *Remains on the list*
   - 445 - *Remains on the list*
   - 446 - *Remains on the list*
   - 447 - *It can be removed from the list.*
     The advice has been written, and it is attached to the documents.

3. **Announcements**
   Van Dissel has to leave at 13.25.

4. **Advices / correspondence**
   - Advice on M-EER part B 2022-2023
   - Advice on B-EER part B 2022-2023
   No comments

5. **Bachelor Applied Mathematics 2022-2023**
   A. Update new curriculum
   Presentation skills will be part of Modelling 3 in module 4. It was an unintentional omission. The PD says that at the end of module 3, every student does a presentation, where they receive comments regarding their presentation skills. In module 4, this experience will be the starting point when they will follow the course Presentation Skills.

The PD says the Differential Equations line has been discussed with the teachers that are involved in these courses. They are planning on introducing some numerical methods in the course Introduction to PDE. The PD told the teacher of Introduction to PDE that one should not overestimate about what one can do in a 4 EC course. Analysis 3 was presented as if only Metric spaces and Vector calculus was included, but there is actually also a chapter on differentiation included. Detailed comments such as the passing grade of Analysis and the course Optimization have been looked at. The above points have changed in the new proposal.

Lanting is happy with the changes. She is also content with the clarification of the feasibility that has been given during the last meeting. Her only comment is that, aside from the large changes, it was hard to see what had been changed. She thinks that it would be nice to keep track of changes in future situations. She asks if someone has been found to teach ODE. The chairman responds that someone has been found within his chair. This person will assist him during his ODE course in module 6. Thus, he will be properly prepared.

Geerts thinks that teaching Systems Theory in module 2 might be too early in the curriculum. The chairman adds that it has always been appreciated that Systems Theory was being taught after ODE. However, the new version of Systems theory will deal with linear models only. The PD responds that quite a few people insisted that their courses should be later in the curriculum. A slot had to be filled in module 2, and that could be filled by Systems Theory. It uses a lot of Linear Algebra, so it connects well to Linear Structures 2. Furthermore, Differential Equations was dropped by Analysis 1 and 2. This is now covered by Systems Theory. The PD is aware that Systems Theory can cover less material, but he has confidence in Meinsma that he will take this into account.
The chairman adds that the description of Systems Theory mentions Jordan forms. He discussed this with Meinsma, and this is not what he was planning to do. He plans to treat the diagonal form only. Jordan forms was discussed by the teachers to be part of the Differential Equations course. The chairman suggests removing that part from the description of Systems Theory, and mention it for the Differential Equations course.

The chairman also mentions that the current ST course consists of 4 EC including linearization. Thus, for the new course, there is 1 EC left to do a small project or a series of assignments. A project is preferred over assignments by the students of the PC. The PD says that that is also his preference. The chairman says that he thinks this project should be a smaller percentage of the grade; so, 20 or 25 percent instead of 30.

Geerts says that he is missing numerical methods for PDEs in Numerical Mathematics. The Chairman says that they treat initial value problems instead. The PD adds that Numerical Mathematics is currently very much focused on the application. The new course is more fundamental. With this theory part, they have filled the number of ECs. The chairman has another point regarding Numerical Mathematics. In the proposal, there are three graded homework assignments and a final exam. It used to be that the homework was most of the grade and the exam just a small part. The PD says that it will

now be more or less the other way around. The chairman asks for a specific percentage, which the PD will inform him of later.

Geerts says that he is not convinced about module 11 in general. He thinks that Introduction to PDE might be too full. The PD disagrees. He says that separation of variables is already taught in the course DE. The current course Introduction to PDE goes through many different types of PDEs, applies separation of variables, and then solves the resulting ODEs in the same way again. In the new course, the idea is that the teacher teaches this part in one go. This is justified since the students have already seen separation of variables. Hence, a lot of time will be saved, so there can also be some numerics in the new PDE course.

The chairman adds that two lectures in new Differential Equations course are devoted to linear PDEs and solving these with separation of variables. The teacher of Introduction to PDE can build upon that. The current Introduction to PDE uses four weeks to treat separation of variables, but with this plan, it can be reduced to two weeks.

Another point is that the description of Introduction to PDE ends with Numerical Methods. However, the learning goals also mention the weak formulation. That means that Sobolev spaces would have to be addressed. The chairman feels that the description should be polished. The PD says that he talked to the teachers and that he told them to keep in mind what can be taught realistically. He wants to send a new proposal for introduction to PDE at the beginning of September.

The chairman summarized the discussion by saying that the new proposal will come back after summer, where it will be discussed again. It will be similar to this version, except that the separation of variables still has to be taught.

Lanting comments that Introduction to PDE overlaps with a course in the master. The PD thinks that we should not base the bachelor curriculum on our own master courses. The chairman agrees with the PD.

The chairman asks how many EC of reflection education must be in the curriculum, to which the PD answers zero. The chairman says that for Reflection 2, he wonders if it is worth the amount of EC. Lanting and Geerts think that more preparation should be put into the bachelor assignment, and the students would benefit from a larger Reflection 2.

Geerts thinks that having three theoretical courses while also having to prepare for the bachelor assignment is too much. He would be in favour of having two theoretical courses of 5 EC and more emphasis on the preparation of the bachelor assignment. He hears a lot of students that are in the final stages of their Bachelor Assignment that do not really know what they are working towards. He thinks this can be solved by having more preparation.

The PD says that the question is also how big you want to make the Bachelor Project. There needs to be a balance between the time spent on the preparation and the actual project.

The chairman reacts that if something along those lines were to be composed, Graph Theory could be dropped, and those 4 ECs could be redistributed on Introduction to PDE, the electives, and the Reflection. Geerts responds by saying that his proposal is to keep

module 11 as it is currently. The chairman says that that is not going to work, since the staff wishes to change it.
Geerts says that it is not a good idea to diminish the preparation while students are already stressed because they do not know what they are working towards. Lanting says that she is fine with changing module 11 to this proposal, but then Reflection 2 should have completely different content. She says that students feel like they are wasting their time on assignments that they do not think are useful.

The chairman says that he hears their point, and this is something that they have heard for a longer time. The course Literature Review in module 11 is not optimal, since it is not taken seriously. Manthey adds that the course is a waste of time in his opinion. The PD says that the supervisor is very limitedly involved in the literature study. Geerts proposes to then change the focus of Reflection 2.

The chairman summarizes by saying that there is a nearly polished curriculum. A few small changes have to be made. Once that is done and the new version is sent to the PC, he thinks that the PC can approve via email.

B. EER Bachelor programme specific part AM draft

The PD has two comments. First, there was a suggestion to make the TCS Optimization Project an obligatory course. He did not incorporate this, because these students can choose to do their final project in either Q2 or Q4, because the Reflection is in Q1. Furthermore, he wants Q2 to be a minor which enables students to go elsewhere. Both options would be impossible if there is an obligatory course in Q2.
Secondly, there was a discussion about the course Hilbert Space. Physics moved one EC out of Quantum Mechanics into Hilbert Space. The topic that has been moved is Operator Algebra. Thus, they feel that there is not as much overlap as the PC-AM initially thought.

The chairman says that since there are no more comments, the PC will give a positive advice on the new curriculum. The PD will wait for the comments of the faculty council, and then send the new curriculum and the EER out at once. The chairman will collect the votes of the PC by email.

6. EER Master 2022-2023

A. Faculty-wide part

The PD thinks that it would be good for the three Master tracks to have a clear responsible person. Currently, if he wants to change something, he needs to consult 8 groups constantly. This person would be responsible to get consensus from the other people on the track.

Furthermore, he wants to abolish the idea that only the professors can be the chair of a Master project. The chairman says that it is stated in Article B6.2 that a Final Project is chaired by a senior examiner, specifically to be a professor. The PD says it is his suggestion to change the definition of senior examiner via the examination board.

Moreover, he wants to abolish the specific mention of chair in the Master EER. Each track will have a contact person, who will also be visible on the website. The chairman

summarizes that the issue at hand is how the chairs and people are represented in the EER. The PD says that there are some practical issues that still have to be resolved, like choosing a track and mentors.

The chairman summarizes the discussion by saying that it is in principle fine, but the PC knows that there is an ongoing discussion that might lead to some changes in the selection of the graduation committee as stated in Article B6.2. Furthermore, there will be changes in who is responsible for the course list and who is a contact person for a track. The PC would like to see those changes being described properly.

There will be an email discussion to collect votes. The final consent can be given next week.

B. Programme specific part
No comments.

7. AOB / Questions before closing the meeting
No comments.

8. Closure
The chairman closes the meeting at 13.43.

Nr	**Description**	**Meeting**	**Responsible**
436	Talk with the lecturer of Statistics regarding his way of teaching.	03/04/2022	PD
444	Inform the teachers regarding the details and coordination of this 20% rule.	07/06/2022	PD
445	Spend some time with the teachers of MIO to polish the learning goals.	07/06/2022	Chairman
446	Communicate the overlap of the courses and the discouragement to following both courses to the people that approve the students' personal programs.	07/06/2022	M-coordinator