

**Minutes 173th PC-AM-meeting
Tuesday 3 March 2022, 15:45 hr.
TEAMS meeting**

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Present: H.G.E. Meijer (chairman), A. Stoorvogel (PD), J. Schut (M-coordinator), J.B. Timmer (B-coordinator), N. Apeldoorn (Abacus), L. van Dissel, K. Proksch, S.J. Geerts, L.S. Lanting, N. Muntendam, B. Manthey, J de Jong

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Absent (with notice): F.Schwenninger replaces F.P. Schuller. A. Schopbarteld

1. Opening

2. Minutes 172nd meeting 18 January 2022

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Page 2 line 3, The meeting is with the project coordinator, instead of the module coordinator (action point is correct)

Page 2 line 35, it must be made clear that this discussion is a reaction to an advise document the PC created.

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Page 3 line 1, anonymous->unanimous

Page 3 line 6, make this more clear

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The minutes are approved with the above remarks

As a general remark (not to the minutes)

Page 3 line 39-42, this meeting has happened on February 23th.

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Action points:

- 394a *An overview of the spent time has been submitted by 7 students. This action point will be changed to 394b, write an advice to the educational management team with advice regarding the workload of module 2. (Lanting & Chairman)*
- 417 *Remains on the list, an email has been sent but no reply has been received. The PD will follow up to receive a response.*
- 421 *Remains on the list.*
- 423 *Remains on the list.*
- 424a *In the meeting, the module coordinator mentioned that Abacus organizes the LaTeX course and it always used to be good. He does not know what has changed. The B-Coordinator has talked to Apeldoorn who will investigate what happened. There will be a follow-up meeting to discuss this, afterwards the B-coordinator will forward a suggestion for improvement to the PC. (changed to 424b)*
- 429 *Can be removed from the list, it has been added to the documents.*
- 430 *Can be removed from the list, this was unclear communication with the students, this lecture was intended for questions. The students were supposed to watch the videos before the lecture. If this was not done, they could watch the videos during the lectures.*

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- 431 Can be removed from the list, *de Jong will join the meeting shortly.*
- 432 Can be removed from the list, *Apeldoorn has been added to the mailing list.*
- 433 Can be removed from the list, *the report has been published.*
- 434 Can be removed from the list, *advice has been written.*

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3A Meeting with de Jong regarding book for Linear Optimization.

De Jong joins the meeting.

The issue at hand is the following: for years students have complained that the book required for Linear Optimization is very expensive, while according to them they do not need it to follow the course, but it is still required material. The PC wants to discuss why this is happening.

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De Jong made a video on how to read the book. In the evaluation of module 2 of this year (2022) there were no comments regarding the book in this.

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De Jong states the book is factually correct, but hard-to-read compared to high school or calculus textbooks. It has fewer examples, computations and steps are omitted in the proofs. The second part has been accommodated for since de Jong has created his own exercises to train the computational part of the subject. De Jong feels there is value in teaching students to read books like this since papers omit even more steps. This skill is one of the reasons to keep this book. De Jong does not know whether this is the correct place for this skill and if it should come later in the curriculum. The course can be completed without the book but de Jong sees the book as a useful addition.

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Geerts understands the point made by the lecturer about the book. He values the skill to read these books but adds that this is being taught in module 2, a module that is already too full. Lanting does not think the books add any workload since there are students who in general don't use books. She thinks the place of this course is just misplaced in the curriculum. Muntendam agrees with this, he thinks the reasoning should be explained before the book has to be purchased. He says that the slides and lectures by de Jong are sufficient to study the course. Perhaps it would be a good idea to change the status of the book to recommended instead of required.

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De Jong states that if the book were to be adjusted to recommended, he is unable to use exercises from the book. He thinks this would reduce the quality of the course.

The chairman leaves the discussion with this, if in the future students complain again about the fact that the book is not being used de Jong must defend his opinion a lot stronger. For now, the book can be kept as required materials.

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De Jong leaves the meeting.

3. Announcements

Some late items were submitted. The PC will see if they get to discuss these, otherwise, they will get postponed to the next meeting.

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There has been a meeting regarding the WSG gelden. The chairman urges students to come up with any ideas to improve studying. He offers to help channelling such ideas to the vice-dean. Lanting states that the students will have a brainstorm regarding this. The chairman

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recommends attendance by at least one member of staff to keep the ideas within requirements and create realistic expectations.

4. Advices / correspondence

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- Advice Vision (Master) Education with Challenge-Based Learning (172)
 - Mail from Rensink in reaction to advice 172
 - Mail to Rensink about proposed change in the process of EER approval
 - Follow-up mail from Rensink on proposed change in the process of EER approval
 - Mail from Subramaniam, Executive Board, about participation monitor survey
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- Mail from EB-EEMCS: Enquiry Members Faculty Judging Panel Thesis Award (with attachment)
 - Mail from MasterMath invitation meeting 13 May 2022
Geerts and Lanting will coordinate who is going to this meeting.
 - Mail correspondence with B-coordinator about easing BSA

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5. Bachelor Evaluations

- Module 1
 - Module 1 reflection
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- Teachers complain that they have only one day to grade a particular course. The Chairman is surprised since the teachers have the liberty to change the schedule. He recommends making this clear to the teachers in question.

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Action point: *Suggest teachers of module 1 to in the future change the schedule if they think they have too little time to grade a course. (PD)*

As a general remark, the PC noticed that students need to adjust to full physical teaching.

- Module 5
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- Geerts points out the comment that once again the teaching of Statistics is regarded as “boring”. He asks if perhaps there is the option for some didactical training and if this is worthwhile. It is put forward that perhaps A. Betken could take over the teaching of this course. The PD says that this is unfortunately not possible since she is limited in the amount of courses she can teach.

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Muntendam sees that the teacher has attempted to make the lectures more interactive, but it is his way of speaking that makes the course less interesting.

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Action point: *Talk with the lecturer of statistics regarding his way of teaching (PD)*

Postponed to next meeting:

- Module 6
- Module 2

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6. Master evaluations

These documents are not included in the "ALL DOCUMENTS" file as the teachers' evaluations are not locked

- Statistics and Probability
- Game Theory
- Nonlinear Dynamics
- Measure and Probability
- **Statistical Learning**

The teacher mentions that the background of computer science students is different from those of Applied Mathematicians. He wants to change this on the OSIRIS page. The PC thinks it is fine if he does so.

- Mathematical Methods
- Introduction to Risk Theory
- **Markov Decision Theory & Algorithmic Methods**

The comment regarding the cheat sheet from last year reappears and the teacher will take action to make sure this does not happen next year. The chairman thinks the comment that the size of handwriting has an effect on the quality of the cheat sheet is a very good one. The PC wants to give the teacher of this course the opportunity to address this himself.

- Numerical Techniques for PDE
- Optimal Control
- **Stochastic Processes**

Geerts thinks that grading based on reflection instead of the quality of work is strange. The PC cannot deal with grading processes and this should be forwarded to the examination board.

Action point: *Figure out the exact way the course Stochastic Processes is graded, and if there is an issue with this forward this issue to the examination board. (Geerts & Chairman)*

- **Linear Systems**

This is a premaster course for Electrical Engineering. The chairman asks the OSIRIS page to be revised. There is no English description and there are no learning goals.

Action point: *Ask the teacher of Linear Systems to change the OSIRIS page (M-Coordinator)*

- Applied Functional Analysis
- There are no comments.

7. B-AM curriculum changes

After the previous meeting, there has been a lot of discussion and progress regarding the new bachelor's curriculum. The PC will comment on the pieces of the curriculum where the PD still needs advice.

The chairman would like to see a student from the mathematics of data science track join the curriculum committee to comment on the courses. As a secondary comment it must be understood that the curriculum rolls out as the years progress (In the first year of the new curriculum only the first year will be different, students in the current curriculum will continue with this). The PD mentions the PC still receives the proposal of the curriculum for the full three years.

Semester 1:

In semester 1 students will take:

- Linear Structures: same topics as before but more coherence between them. The four step method of proving will carry on through LS2.
- Calculus and analysis: The topics from calculus 1 and 2 will be combined with Analysis 1. The order of these courses will be changed to fit a more logical framework.
- Modelling (Q1): consists of a 1EC programming course together with a modeling problem.
- Systems theory (Q2): As an application of the courses the basics of systems theory will be shown. This course will be based on difference equations which shows a nice application of linear algebra.

The resits of module 1 will be done in module 2, so that students have more time to recover if they made a bad start during their first module.

The main problem of semester 1 is that there are no good books that combine treatment of both analysis and calculus. The question is if it would be a problem to use two separate books. The main issue is that students might get confused about is that in calculus you take things for granted and use general techniques, while in analysis, everything needs to be done formally.

Geerts thinks, after talking to multiple students that there seems to be no issue with using multiple books and even with splitting up the analysis and calculus course in multiple different exams. Lanting says that to address the confusion that it is useful to first have a formal definition in the analysis course and see the application in the calculus course.

The chairman states that it must be made clear, both within the course and in the exam, which approach is required. That is, should the answer show a simple computation or a proof.

The PC does not object to the use of two books. However it is all about laying out the material very clearly, what are the books used for. In what way do you have to use limits, do you want the students to compute something or prove something.

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Semester 2:

- The current module 4 is moved to Q3.
- 5 - Q4 will now focus more on Numerics (5EC for Numerics and 5EC for Differential Equations).
- Modelling B will include more programming.
- Modelling C will include presentation skills and two smaller projects.

10 A recommendation was made to look into the beginning of signals and transforms whether function spaces should be looked into more deeply.

The chairman states it is hard to provide input to some of the courses since there are no learning objectives given, just names.

15 Semester 3:

Both the Statistics group and the DMM group want to use the project in Q6, this is not possible. The suggestion is to make statistics in Q5 larger (5EC) and optimization and modelling D will be aligned, perhaps training a neural network in a project. Q5 has 3EC left over. The curriculum committee suggests to use this time for some reflection on mathematical research to have more room in Q11.

20 Lanting likes the idea of involving the history of mathematics earlier in the bachelor. The place of history may perhaps even be in year 1, but this has to be made more precise when the learning goals and ECS are available.

25 Semester 4 and 5 are basically unchanged at the moment.

Semester 6:

30 Hope is that room can be created in semester 6 (taking away some of the 7EC of reflection). If an additional 3EC could be removed there would be an opportunity to have Graph theory and PDE as a fixed course with an additional elective. The second question is whether the course next to the bachelor project should be graph theory instead of complex function theory.

35 The chairman states the purpose of electives is to first orient towards the master's degree and to deepen knowledge on topics students already find interesting. Apeldoorn states that the PDE course is a very tough course for people who are interested in it already. He thinks it is a better idea to make this course an elective so that people who are going into operations research do not have to follow this course. The Chairman states that it cannot hurt to know PDEs. Geerts does not think there should be a question of whether electives are deepening or broadening but that they serve as a choice between deepening or broadening.

40 Muntendam thinks it is very important to give students opportunity to orient themselves with respect to the master, since a lot of students in this stage of their bachelor are still unsure of what they want to do.

45 The PD is fearful of the electives since there might be a form of bias, where other students tell you that PDEs are very hard and that you should avoid it. In this way some students might steer

away from these courses. Lanting does not think that making a course compulsory takes away any of this bias.

5 Schwenninger understands this bias, and this is very subjective. He thinks that the bachelor's curriculum should be designed so that this bias towards these fields is reduced. It is not a good idea according to him to change the design of an entire bachelor because some students might not like certain courses. Schwenninger also thinks that the view that people should drop courses because they do not find them interesting is a bad one. The bachelor should not be geared towards a very specific area of mathematics already but a broad exposure so that in the masters
10 you can focus on something. The chairman notes that in the course Scientific Computing, students during their oral exam complained that there were questions about PDEs that they "do not like". He thinks this is alarming.

Summary of the discussion by the chairman:

15 The chairman senses that electives could be a possibility in module 11, but it is far from clear how module 11 should be designed. Putting PDE or any other course of whatever size in module 11 as compulsory is also not clear. The reasons for electives as orientation and a little freedom have been discussed. He suggests the place for deepening or electives could be in the minor, but we do not offer any minors in mathematics. The case for having at least one elective in module
20 11 seems to be there, but it is not very clearcut at the moment. A more thought-through proposal for the curriculum with topic descriptions would help with this. The strong sense for needing electives is not there but 4-5 EC of free choice seems to be appreciated.

8. AOB / Questions before closing the meeting

25 Lanting sent an email in which she tried to compile opinions of students following Scientific Computing currently because she felt there was a lot of unhappiness among students. She thinks there is room for improvement in the communication by the teacher. In the previous meeting, the PC talked about challenge-based learning and agreed that this should not be a compulsory component of courses in Applied Mathematics, but this appears currently to be a part of
30 Scientific Computing. It is being implemented in a way that confuses both students and staff members. This is done because the lecturer heard that it was compulsory to have 30% of her course challenge-based learning (contradictory to the outcome of the previous PC meeting). Lanting asks why this is happening.

35 There has been a lot of discussion surrounding CBL. The lecturer of Scientific Computing wants to have a large project in her course where the students can apply the techniques to their area of interest. The PD told her that students must be well informed of this idea beforehand. The PD asks for permission to forward Lanting's mail to the teacher of Scientific Computing, she agrees to this. Lanting wants the teacher to know the mail is not intended as an attack but that she
40 found it strange that CBL was introduced after the previous meeting. Lanting want the expectations to be clear from the start, clear communication is key.

Action point: Take the comments about Scientific Computing to the lecturer (PD)

45 Next meeting there will be a discussion about the introduction to PDE, the chairman urges a talk with the lecturers teacher Numerical Techniques for PDE to streamline these changes.

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9. Closure

Next meeting: 19 April 2022

Nr	Description	Meeting	Responsible
394b	Write an advice to the educational management team with advice regarding the workload of module 2	08/03/2022	Lanting, Chairman
417	A follow-up to state the conclusion of action point 405	14/09/2021	PD
421	Ask the teacher of Mixed-Integer Optimization (previously Optimization Modeling) to send the learning goals of the course to the PC (as well as adding them to the OSIRIS page), and to check those against the ones from the Master math course Advanced Linear Programming. Correspondence via email is sufficient.	14/09/2021	PD
423	Discuss evaluation with lecturers of Spatial Statistics and ask for improvements regarding communication. To make sure the two teachers teach synchronized.	14/09/2021	PD & M-Coordinator
424b	Forward a suggestion for improvement of organizing the LaTeX course to the PC	08/03/2022	B-Coordinator
435	Suggest teachers of module 1 to in the future change the schedule if they think they have too little time to grade a course.	08/03/2022	PD
436	Talk with the lecturer of statistics regarding his way of teaching	08/03/2022	PD
437	Figure out the exact way the stochastic processes course is graded, if there is an issue with this forward this issue to the examination board	08/03/2022	Geerts & Chairman
438	Ask the teacher of Linear Systems to change the OSIRIS page	08/03/2022	M-Coordinator
439	Take the comments about Scientific Computing to the lecturer	08/03/2022	PD

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