UNIVERSITEIT TWENTE.

To: Prof.dr. A.A. Stoorvogel, Programme Director AM

From: Programme Committee AM (OLC-TW)

FACULTY OF ELECTRICAL ENGINEERING, MATHEMATICS AND COMPUTER SCIENCE

FROM
T x 31 53 489 3380
PC-AM@utwente.nl

DATE
7 December 2021
OUR REFERENCE
EWI21/BOZ/10792/MvdK

CC:
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SUBJECT
Advice new curriculum BSc AM

Dear Programme Director,

On 16th November 2021, we discussed the very preliminary draft of a new bachelor curriculum. The discussions led to a few recommendations from the Programme Committee for the Curriculum Committee that we hope are kept in mind.

First, we think repositioning the analysis and calculus more strongly is a good design goal. This change would be even better if it allows treating topics such as Partial Differential Equations and Machine or Statistical Learning at a more advanced level.

Second, in this process, we would like to stress that our programme has applications in its name. The draft we received suggests that happens all in the projects. We would like to believe the projects do this, but there are so many other things that these projects should include, such as academic skills and programming. It is all too easy that the applied nature changes, while that aspect is what our students appreciate. The students thought an additional student member in the committee would be good to get more and more representative input.

A third point we noticed is the idea of not having electives. The PC-AM unanimously believes some form of electives in module 11 should remain. Students should somehow orient themselves on their future if in mathematics. Electives could be chosen as in the current two out of four rule. As an alternative, we could foresee that students have to choose two courses out of two each (2x2). Regarding module 11, the students strongly suggest moving Complex Function Theory to module 11 so that module 12 entirely focuses on the bachelor's assignment and reflection.

P.O. Box 217 7500 AE
Enschede
The Netherlands
www.utwente.nl

In the current design, it seems natural to switch modules 3 and 4. For instance, ODEs and Optimization come pretty early and might not reach the level they get to now. Also, by swapping module 4 would return to the place in the first year it was originally designed to be. However, we find this difficult to judge without more concrete topics what the calculus and algebra courses would contain. So in the next iteration, we suggest that topics and goals are specified too, even if that is only an initial version. It would not harm if committee members go about and ask their colleagues to check what they think is feasible.

We want to mention that the course Optimization has been diminished over the years, from 9 EC pre-TOM to 8 EC now, to only 5 EC in the new design. As it is an important topic, it deserves a decent amount of ECs. In addition, in the learning line on Probability, Optimization and Statistics, we think it would be good to teach a few topics on Machine Learning, also concerning the master track Mathematics of Data Science.

Giving up on the connection to physics in the current module 3 is, on the one hand, an opportunity for this re-design. On the other hand, the double-degree programmes should not be forgotten. It will be a pity if the new design creates obstacles for an AM-AP double degree.

Lastly, we strongly advise communicating a pre-final version at the end of February or early March to a larger audience, e.g. the AM staff. A change will be much easier if it is supported by many. Therefore, timely communication to pick up criticism and suggestions and allow for adaptations is needed.

Best regards,

Hil Meijer
Chair PC-AM