

# AAC Minutes from Math Round Table Feedback

## 14<sup>th</sup> May, 2018

### 1 Minutes of the Meeting

In this section, the meeting is documented. The below feedback is presented (more or less) unfiltered and unsorted, the points are taken in chronological order of the meeting. A discussion of the feedback with the main points to be changed, can be found in section 2.

Attendees: Colin, Malte, Scott, Alina, Maria, Takundei, Abhik, Prabhat, Kendra, Steffen, Mikhail, Daniel, Marco, Aiman, Deepak

Meeting Place: Nordmetall Servery, 2:15

#### 1.1 Info Points:

- 1) Purpose of the round table
- 2) Coming changes of the module system

#### 1.2 Feedback:

- 3) Feedback about courses per year:

##### A) 1st year:

- (i) Math software lab is useless, if say Mathematica skills are needed, teach them on demand
- (ii) Want 7.5ects for analysis I
- (iii) Mandatory tutorial, in which problems are solved together (perhaps as an option)
- (iv) Also, helps the students checking themselves
- (v) Analysis II: Currently, homework was too computational
- (vi) Have advanced linear algebra/introductory linear algebra
- (vii) Levels of linear algebra: matrix algebra (applied), foundations of linear algebra (medium), introductory linear algebra (advanced)
- (viii) Second part of linear algebra in second semester (additionally to what is taught now), like at other German universities
- (ix) Undergraduate seminar was very good
- (x) Perhaps something similar in 6th semester

##### B) 2nd year:

- (i) More ects for elements of stochastic processes, remove elements of probability from math study program
- (ii) Real analysis is taught too slowly currently
- (iii) Complex analysis is fine

- (iv) Switch algebra and topology (4th vs. 3rd semester)
- (v) Calculus on manifolds should be in 4th semester as well
- (vi) Numerical methods should be more computational (and using programming)
- (vii) Applied core math module is fine
- C) 3rd year:
  - (i) Not allowed to take non-major specialization classes
  - (ii) Not enough courses in 5th semester
  - (iii) Idea: offering classes that can also be taken by masters/physicists, ...
  - (iv) Better advice to students regarding specialization classes
  - (v) Problem: no master. program
  - (vi) Want more specialization classes
  - (vii) Introductory Topology: second part was too quick and hand-waivy, why are smooth manifolds needed in topology, more about covering spaces
  - (viii) Going in direction of algebraic topology
  - (ix) Number theory: good, controversial: not really specialization class
  - (x) Calculus on manifolds: good
  - (xi) Differential equations: currently not taught well, too unstructured
- 4) Triangle classes:
  - A) Why are there no math triangles, like number theory. for anyone, math and politics
- 5) General issues with teaching:
  - A) Some professors should be more open minded/careful when making comments about students nationalities
  - B) Grades are published late
  - C) Not enough classes in math, campus track need to take non math core module
  - D) Therefore, it Would be nice if students were allowed to take other specialization/master classes instead of a 4th core module
  - E) TAs are only given SA contracts and not enough hours, also too little guidance
  - F) Under representation of females in math department (faculty)
  - G) Want lecture notes for all lectures
    - (i) Suggestions: readings for each lecture announced
    - (ii) Even better: Lecture notes:
      - Either by professor
      - Or by a notes-taker (student), being payed and getting credits for it
- 6) Not enough information about thesis work and expectations for thesis
  - A) Deadlines depend on supervisor
- 7) Better options and advertisements of current options for World track
- 8) Better info/communication from faculty in general
  - A) Module coordinators are not accessible

## 2 Discussion of the feedback

In this section the feedback will be discussed and suggestions of improvements of the math study program, will be presented. We will start with class specific feedback, then discuss general feedback and finally suggested changes of the undergraduate math program structure. Finally, the author will give some meta feedback about the round table.

## 2.1 Class specific feedback

There was positive feedback for the following classes/modules:

- 1) Undergraduate seminar
- 2) Analysis II, but this should receive more credits
- 3) Complex Analysis
- 4) The applied core math module
- 5) Number Theory
- 6) Calculus on Manifolds

and negative feedback for (except for the classes already mentioned, that should be dropped):

- 1) Real Analysis, taught too slowly
- 2) Introductory Topology, second part was too fast and hand-waivy, additionally too much time was lost teaching background on smooth manifolds
- 3) Numerical methods, should cover programming to implement the methods, specifically in homework exercises
- 4) Differential equations, too unstructured

## 2.2 General feedback

Furthermore, there were a number of general complaints and suggestions brought up:

- 1) There are not enough math classes, campus track students are forced to take a non-math core module
- 2) It would be nice if students were allowed to take several specialization or graduate classes instead of a fourth core module, when choosing Campus track
- 3) There is an under-representation of females in the math department (faculty)
- 4) Some professors should be more careful, when commenting on some students origins
- 5) Grades are often published late
- 6) TAs are currently only given SA contracts and SAs/TAs generally receive not enough hours (less then they are spending)
- 7) Also TAs receive too little guidance
- 8) Students receive not enough information about thesis work
- 9) Deadlines and expectations are not communicated well and depend on the supervisor
- 10) There should be more and better options for World track, the existing options should be better advertised
- 11) The communication from faculty should be improved in general
  - A) In particular, the module coordinators were hardly accessible this semester
- 12) There should be lecture notes or at least announced pre-readings for math classes

## 2.3 Suggestions for changing the math study program

The following changes have been suggested:

- 1) First year structure
  - A) Remove the math software lab
  - B) give 7.5 ects for Analysis I
  - C) Add an advanced linear algebra class (like the current introductory linear algebra in third semester)

- D) This, advanced linear algebra class could be treated similarly to calculus with its different levels already existing
  - E) Additionally, add a class linear algebra II in second semester to continue the class advanced linear algebra in first semester
  - F) Then, the classes foundations of linear algebra (3rd semester) and introductory linear algebra (4th semester) are redundant
- 2) Second year structure
- A) Remove Elements of probability
  - B) Give 5 ects for Elements of stochastic processes
  - C) Move introductory algebra to the third semester and Topology (or Calculus on Manifolds, this alternates) to the fourth
- 3) Triangle classes:
- A) There should be more math triangle classes

**Discussion** Here the main points are removing the math software lab and giving more credits to Analysis I, replacing Foundations of – and Introductory Linear Algebra, by two 5 ects advanced linear algebra classes throughout the first year and to remove Elements of Probability and instead give 5 ects to Elements of Stochastic Processes, having two class slots per week, instead of just one. Also, the order in which students take algebra and Topology/Calculus on Manifolds should be changed. Overall, these changes amount to one additional class of 5 ects to be taught (the second linear algebra class) and furthermore move 5 major-related ects from second to the first year, however the overall amount of major-related credits remains the same. These changes are needed however, in order to ensure that math students learn prerequisites, before taking classes requiring them and could also be useful to students in other majors. Particularly, offering the proposed additional class "advanced linear algebra I" following the same idea that lead to establishing different difficulty/abstraction levels for the calculus classes, can be useful at least also for physics students. This is also the way linear algebra is taught at most German universities. Finally, these changes would help better matching the credits received for classes to the actual workload and to better balance the math education across different areas of mathematics.

## 2.4 Meta observations

In this subsection the round table will be discussed as a method of gathering feedback from students. Overall, the round table was successful. Although only a minority of math students attended the round table, there were at least two students in each year as well as further students from other majors (mostly physics), taking the math classes. The feedback was very extensive, however still somewhat detailed discussion were possible. In particular, compared to the author's experience in the round table last year, there were both more and more constructive feedback as well as more student participating in the round table (partially due to the fact that now also first year students were invited). Also, it proved to be useful to invite not only math students and to invite first year students. Therefore, the author wants to suggest these student organized round-tables as a useful addition to currently used ways of gathering feedback.



Academic Affairs Committee  
Undergraduate Student Government  
Jacobs University Bremen



On behalf of the  
Academic Affairs Committee  
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