

Teaching portfolio

1. Teaching CV

A list of any lecturing and supervision tasks, including specification of academic fields, scope, level (bachelor, master, continuing education, PhD) as well as any external examiner tasks.

Below is a typical semester in 2015 and another in 2020 (to illustrate the impact of CoVid19 and my digital/online teaching..)

A full list of my more than 30 years of teaching will not be provided. Suffice it to say that I

Teach and supervise mathematics at all levels - from first year to PhD.

In a wide variety of study programs: mathematics, engineering, land surveying, ...

I am a member of the group of external examiners in mathematics under the ministry of Research and Education.

I act as external examiner at several exams each year. In later years mostly at master thesis level, where real expertise is needed.

January - June 2020

Linear Algebra for BA and MP. New version developed along the way - lectures, workshops, selfstudy as a pilot for the total change of first year teaching from the fall of 2020.

From March 16, online - lectures through my YouTube channel, established over the three days since the announcement of lockdown. Exercises on Discord and MS Teams.

Mapprojections, 5 ECTS, Land Surveyors 4th semester Aalborg and Copenhagen. Online - YouTubeStreaming and MS Teams for exercises.

September-December 2015:

Linear Algebra, 5 ECTS for Geography, Land Surveyors, Health Technology and BEM(City, Energy and environment planning and administration)

Advanced Mathematics as you need it in Science and Engineering, 4ECTS, PhD-course given together with Morten Nielsen.

Non-linear Differential Equations and Dynamical Systems, 3ECTS PhD-course given together with Martin Raussen and Rafael Wisniewski.

External Examiner at Copenhagen University (Master Thesis)

Exams for a student on the original Master in Maths program. Expected to write his thesis in the spring.

2. Study administration

My 30 years of teaching will not be listed, but I have

Been on the "F" study board for 8 years

Been semester coordinator on more semesters up through the maths study than anyone would like to count.

Coordinated courses with more than one teacher - in particular phd.courses.

I have taken part in several revisions of the study regulations for mathematics – for instance in 2010, the committee for the high-school teacher education (to-fagsudvalg) and many other committees and work groups.

2020- now: I am in charge of a major change of the first year teaching of calculus and linear algebra on our 3 campuses.

3. University pedagogy qualifications

A list of any completed courses in university pedagogy, PBL courses, workshops, academic development projects, collegial guidance and supervision, etc.

Type your answer here...

Completed the AAU pedagogical course in 1996.

Have supervised several assistant professors through the university pedagogical course.

4. Other qualifications

.Committees etc.

[2021--] Member of NCUM (National Committee for Udvikling af Matematikundervisning] Expert panel on Transitions

within the school system.

[2019--] Member of Danmarks MatematikUndervisningsKommission, DMUK.

[2007-2021] Member of the Advisory Committee for mathematics in High School (stx and hf).

[Fall 2016]: Matematikkommissionen. Under UVM. I Gymnasireformen 2017 havde matematik stor politisk interesse. Man nedsatte en 13 personers kommitte. Jeg var én af tre universitetsmatematikere i kommissionen - og eneste medlem fra Jylland.

[2010 – 2011] Medlem af UVM's arbejdsgruppe om matematikfærdigheder på langs og tværs af uddannelsessystemet.

Articles: [2006] Rundkredspædagogik. Eller når matematik er andet end at regne stykker. L.Fajstrup, T.B. Keiding, B. Højgaard, Gymnasieskolen. 89, (9).

[2007] Numb3rs. Underholdning og inspiration til matematikundervisning Fajstrup, L., 2007, I : LMFK-Bladet. 29,

[2007] L. Fajstrup. At eksperimentere med Matematik i Eksperimentel Matematik: en inspirationsbog til undervisning.

Afzelius m.fl., N. M. (red.). København: Matematiklærerforeningen.

[2009] Matematikkens betydning undervurderes Fajstrup, L., Lykkelig i Nørmland. Gyldendal

[2012] Behøver rigtige drenge ikke at lave lektier? Fajstrup, L. & Afzelius, N., 2012, I : MONA: Matematik og Naturfagsdidaktik. 2, s. 71-74.

5. Teaching activity development and teaching materials

Since 2013 I have taken a very active part in the development of material for the first year courses:

Since fall 2018, I have been part of developing a new way of teaching first year mathematics for all first year students. The main changes are: Oral exams based on workshops related to the students' study program. Training basic skills (row operations, partial derivatives,...) in a digital environment. New literature (chosen after comparing with the major Scandinavian engineering institutions NTNU, Chalmers, KTH).

I lecture via YouTube-streaming - starting Monday March 16 at 8 am after lockdown announced 5 days before.

Before that I have also been active within the traditional course setup:

- I have made Pencasts covering topics in Calculus and Linear Algebra.
- structured exercises (they are put in groups with a short description so that the students know what they cover and can skip some once they understand the topic covered),
- I write long "spisesedler" – short overviews of the topic covered in a given lecture..
- I have developed a new way of evaluating my LinAlg/Calculus courses, namely short meetings with representatives of the groups following my lectures. This enables me to catch problems early and also to get new ideas from the students. Plus I can explain to them why I do what I do.
- I have taken a new approach to presenting applications of mathematics to first year students. They do not know much maths and moreover, they do not know their own subject very well yet: I give a very short (one slide) example of a topic from the area the students come from, with some maths involved (I write down specific pde's, etc. Something which is obviously mathematics. This may not (and that is the new part) be mathematics covered in the current course. The idea is that they need "this course and much more".

6. Teaching awards you may have received or been nominated for

Type your answer here...

2010: Teacher of the year for the Maths and Physics Studies.

7. Personal reflections and initiatives

Here you may state any personal deliberations as regards teaching and supervision, any wishes and plans for further pedagogic development, plans for following up on feedback/evaluations from students, etc.

Type your answer here...

8. Any other information or comments

I do a lot of dissemination::

The Numb3rs blog, numb3rs.math.aau.dk on which I wrote more than 200 entrances about the mathematics in the TV-series Numb3rs.

The new blog.math.aau.dk on which I have written 50+ entrances so far.

The department Facebook page, which I am admin of.

Give talks to UNF mostly in Aalborg and Copenhagen, but also in Odense and Aarhus.

Give talks to high school students – and teachers, in 2019 to high school students in Sundsvall, Sweden, at the Kovalevskaya days.

Answer questions from high school teachers on Studieretningsprojekter – possible topics and literature.