# Teaching portfolio

## 1. Teaching CV

(last update July 22, 2022) TEACHING AND EXTERNAL EXAMINER TASKS SINCE 2015: Spring 2022 Two half day lectures at "Algebraic Coding Theory Summer School", University of Zurich, Switzerland. PhD level. External examiner in first year mathematics projects at Technical University of Denmark, 1 day Autumn 2021 Lecturer at the course "Information and Coding Theory" at 7th semester of the Math-Tech Study, 2 ECTS, bachelor level, AAU Spring 2021 "Mathematical Kaleidoscope II," one-day lecture at PhD course, PhD level, AAU Autumn 2020 Supervision of PhD student René Bødker Christensen. Project on quantum error-correcting codes. PhD level, AAU Lecturer at the course "Information and Coding Theory" at 7th semester of the Math-Tech Study, 2 ECTS, bachelor level, AAU Spring 2020 Supervision of PhD student René Bødker Christensen. Project on quantum error-correcting codes. PhD level, AAU Autumn 2019 Supervision of PhD student René Bødker Christensen. Project on quantum error-correcting codes. PhD level, AAU Spring 2019 Supervision of PhD student René Bødker Christensen. Project on quantum error-correcting codes. PhD level, AAU Autumn 2018 Supervision of PhD student René Bødker Christensen. Project on quantum error-correcting codes. PhD level, AAU Spring 2018 Supervision of PhD student René Bødker Christensen. Project on quantum error-correcting codes. PhD level, AAU "Mathematical Kaleidoscope II," one-day lecture at PhD course, PhD level, AAU Autumn 2017: Lecturer for the course "Datalogiens Teoretiske Grundlag" at 1st semester of Study of Computer Science and Software Engineering, 5 ECTS, bachelor level, AAU Supervision of PhD student Umberto Martínez-Peñas. Project in secret sharing and network coding. PhD level, AAU Co-supervisor for two projects at 7th semester of the Math-Tech Study. Topic: Various topics within information theory and related areas. 15 ECTS, bachelor level, AAU Lecturer at the course "Information and Coding Theory" at 7th semester of the Math-Tech Study, 2 ECTS, bachelor level, AAU Spring 2017: Supervisor for one student writing a Master Thesis on Algebraic Function Fields and Gröbner bases, 10th semester of Study of Mathematics, 30 ECTS, master level, AAU Supervision of PhD student Umberto Martínez-Peñas. Project in secret sharing and network coding. PhD level, AAU External examiner in first year mathematics projects at Technical University of Denmark, 2 days. "Algebra - 2," course at 4th semester of the Study of Mathematics, 5 ECTS, bachelor level, AAU Supervisor for four groups of first year students at the Study of Mathematics. Topic: Steganography. Bachelor level, 15 ECT, AAU Supervisor for Assistant Professor in connection with teaching training course, AAU "Mathematical Kaleidoscope I," one-day lecture at PhD course, PhD level, AAU Autumn 2016: Coordinator for the development project "first.math" which includes almost all first year mathematical courses for all studies at Aalborg University, bachelor level, AAU (Aalborg, Esbjerg and Copenhagen campuses) Supervision of PhD student Umberto Martínez-Peñas. Project in secret sharing and network coding. PhD level, AAU Supervisor for Assistant Professor in connection with teaching training course, AAU Co-supervisor for three projects at 7th semester of the Math-Tech Study. Topic: Various topics within information theory and related areas. 15 ECTS, bachelor level, AAU Lecturer at the course "Information and Coding Theory" at 7th semester of the Math-Tech Study, 2 ECTS, bachelor level, AAU Supervisor for bachelor project (four students) of Study of Mathematics. Topic: Robotics and Gröbner bases. 10 ECT, Bachelor level, AAU Supervisor for four project groups at 1st semester of the Math-Econ Study, 5ECTS, AAU Spring 2016: Coordinator for the development project "first.math" which includes almost all first year mathematical courses for all studies at Aalborg University, bachelor level, AAU (Aalborg, Esbjerg and Copenhagen campuses) Supervision of PhD student Umberto Martínez-Peñas. Project in secret sharing and network coding. PhD level, AAU External examiner in first year mathematics projects at Technical University of Denmark, 2 days. "Algebra - 2," course at 4th semester of the Study of Mathematics, 5 ECTS, bachelor level, AAU Supervisor for bachelor project in Coding Theory at Study of Mathematics, 10 ECTS, bachelor level, AAU Supervisor for four groups of first year students at the Study of Mathematics. Topic: Steganography. Bachelor level, 15 ECT, AAU Autumn 2015: Coordinator for the development project "first.math" which includes almost all first year mathematical courses for all studies at Aalborg University, bachelor level, AAU (Aalborg, Esbjerg and Copenhagen campuses) "Calculus," course at 1st semester of a collection of studies, including chemistry, biology, machine and production, 5ECTS, bachelor level, AAU Supervision of 1st semester mathematics students writing projects in discrete dynamical systems, 10 ECTS, bachelor level, AAU. "Diskret Matematik," course at 3rd semester of the Study of Mathematics, 2 ECTS, bachelor level, AAU Supervision of PhD student Umberto Martínez-Peñas. Project in secret sharing and network coding. PhD level, AAU Spring 2015: Coordinator for the development project "first.math" which includes almost all first year mathematical courses for all studies at Aalborg University, bachelor level, AAU (Aalborg, Esbjerg and Copenhagen campuses) Supervision of 2nd semester mathematics economics students writing projects on virtual power plants (application of graph theory), 10 ECTS, bachelor level, AAU Supervision of PhD student Umberto Martínez-Peñas. Project in secret sharing and network coding. PhD level, AAU "Algebra - 2," course at 4th semester of the Study of Mathematics, 5 ECTS, bachelor level, AAU "Kodningsteori," course at 6th semester of the Study of Mathematics, 2.5 ECTS, bachelor level, AAU External examiner in the course "Datalogiens Matematiske Grundlag", 1st semester of the Study Bachelor of IT (BAIT), bachelor level, AAU External examiner in first year mathematics projects at Technical University of Denmark, 2 days. "Mathematical Kaleidoscope 2," one-day lecture at PhD course, PhD level, AAU External examiner in Bachelor project in coding theory at DTU Compute, bachelor level EXTERNAL EXAMINER TASKS BEFORE 2015: Since 1999 I have conducted a variety of external examiner tasks. This includes written exams, oral course exams, projects at bachelor and master level (including bachelor theses and master theses) as well as participation in PhD assessments committees and chairman of such committees. I have extensive experience with group exams where the students are being evaluated individual. I have served as external examiner at Aalborg University (Aalborg Campus and Esbjerg Campus), at Technical University of Denmark and at University of Trento. TEACHING BEFORE 2015 Autumn 2014: Coordinator for the development project "first.math" which includes almost all first year mathematical courses for all studies at Aalborg University, bachelor level, AAU (Aalborg, Esbjerg and Copenhagen campuses) "Lineær Algebra," course at 1st semester

of the computer science and software engineering study, 5 ECTS, bachelor level, AAU Supervision of 1st semester mathematics students writing projects in discrete dynamical systems, 10 ECTS per group, bachelor level, AAU. Supervision of PhD student Umberto Martínez-Peñas. Project in secret sharing and network coding. PhD level, AAU Spring 2014: Coordinator for the development project "first.math" which includes almost all first year mathematical courses for all studies at Aalborg University, bachelor level, AAU (Aalborg, Esbjerg and Copenhagen campuses) "Mathematical Kaleidoscope 1," one-day lecture at PhD course, PhD level, AAU Supervision of 2nd semester mathematics students writing a project in graph theory, 10 ECTS per group, bachelor level, AAU Supervision of 2nd semester mathemtics-economics students writing projects on virtual power plants (application of graph theory), 10 ECTS per group, bachelor level, AAU Supervision of Master degree project in coding theory, 30 ECTS, master level, AAU Supervision of PhD student Stefano Martin. Project in coding theory and secret sharing. PhD level, AAU Autumn 2013: Coordinator for the development project "first.math" which includes almost all first year mathematical courses for all studies at Aalborg University, bachelor level, AAU (Aalborg, Esbjerg and Copenhagen campuses) "Lineær Algebra," course at 1st semester of the Study of Computer Science and the Study of Software Engineering, 5 ECTS, bachelor level, AAU "BasalMat", course in high-school math for 1st year students at AAU, 1 ECTS, bachelor level, AAU Supervision of PhD student Stefano Martin. Project in coding theory and secret sharing. PhD level, AAU Spring 2013: Coordinator for the development project "first.math" which includes almost all first year mathematical courses for all studies at Aalborg University, bachelor level, AAU (Aalborg, Esbjerg and Copenhagen campuses) Supervision of a student writing a bachelor thesis in coding theory, 7th semester of the Study of Mathematics, 15 ECTS, bachelor level, AAU "Diskret Matematik," course at 1st semester of the Study of Computer Science, the Study of Software Engineering, the Study of Mathematics and the Study of Mathematics Economics, 5 ECTS, bachelor level, AAU Supervision of PhD student Stefano Martin. Project in coding theory and secret sharing. PhD level, AAU Autumn 2012: Coordinator for the development project "first.math" which includes almost all first year mathematical courses for all studies at Aalborg University, bachelor level, AAU (Aalborg, Esbjerg and Copenhagen campuses) "Lineær Algebra," course at 1st semester of the Study of Computer Science and the Study of Software Engineering, 5 ECTS, bachelor level, AAU "Linear Algebra," part of course at 1st semester of the Study of Electric Engineering, 2 ECTS, bachelor level, AAU Esbjerg Campus Supervision of students writing a project in network coding, 6th semester of the mathematics study, 15 ECTS, bachelor level, AAU Supervision of PhD student Stefano Martin. Project in coding theory and secret sharing. PhD level, AAU Spring 2012: "Algebra 2," course at 4th semester of the Study of Mathematics, 2.5 ECTS, bachelor level, AAU "Diskret Matematik," course at 1st semester of the Study of Computer Science, the Study of Software Engineering and the Studies of Mathematics and Mathematics Economics , 5 ECTS, bachelor level, AAU Supervision of students writing a project in network coding, 6th semester of the Study of Mathematics, 15 ECTS, bachelor level, AAU Supervision of PhD student Stefano Martin. Project in coding theory and secret sharing. PhD level, AAU Autumn 2011: "Lineær Algebra," course at 1st semester of the Study of Computer Science and Study of Software Engineering, 5 ECTS, bachelor level, AAU Supervision of students writing a project in network coding, 9th semester of the Study of Mathematics, 20 ECTS, master level, AAU Supervision of PhD student Stefano Martin. Project in coding theory and secret sharing. PhD level, AAU Spring 2011: "Kodnings og informationsteori," course at 4th semester of the Study of Mathematics, 2.5 ECTS, bachelor level, AAU Supervision of students writing a project in coding and information theory, 4th semester of the Study of Mathematics, 15 ECTS per group, bachelor level, AAU Co-supervision of students at 8th semester of the applied mathematical study writing a project in electric engineering (main supervisor: Petar Popovski), 5 ECTS, master level, AAU Supervision of PhD student Casper Thomsen. Project in coding theory and network coding. PhD level, AAU Autumn 2010: "Lineær Algebra," course at 1st semester of the Study of Computer Science and the Study of Software Engineering, 5 ECTS, bachelor level, AAU "Cryptography," PhD course in collaboration with Hans Hüttel, PhD level, AAU "Diskret Matematik," course at EVU, 5 ECTS, bachelor level, AAU Supervision of PhD student Casper Thomsen. Project in coding theory and network coding. PhD level, AAU Spring 2010: "Network Coding" six hours course given at Soria Summer School on Computational Mathematics, Universidad de Valladolid, July 12-16, 2010, Soria, Spain. PhD level "Integrals and Differential Equations," course at 6th semester of the Study of Medialogy, 5 ECTS, bachelor level, AAU "Algebraic coding theory," course at 6th semester of the Study of Mathematics, 2.5 ECTS, bachelor level, AAU Supervision of Master degree project in coding theory, 30 ECTS, master level, AAU Supervision of PhD student Casper Thomsen. Project in coding theory and network coding. PhD level, AAU Autumn 2009: Study circle in coding theory for PhD student Casper Thomsen. PhD level, AAU Supervision of PhD student Casper Thomsen. Project in coding theory and network coding. PhD level, AAU Spring 2009: "Gröbner Bases, Geometric Codes and Order Domains," Summer Doctoral School in collaboration with Massimiliano Sala, June 8-13, 2009, University of Trento, Italy. PhD level "Integrals and Differential Equations," course at 6th semester of the Study of Medialogy, 5 ECTS, bachelor level, AAU "Algebraic coding theory," course at 6th semester of the Study of Mathematics, 2.5 ECTS bachelor level, AAU "Computeralgebra," course for newly employed high-school teachers with a bachelor degree in Mathematics, 5 ECTS, continuing education, Aalborg University, 2009 "Mathematical Kaleidoscope 2," one-day lecture at PhD course, PhD level, AAU Supervision of PhD student Casper Thomsen. Project in coding theory and network coding. PhD level, AAU Autumn 2008: "Cryptography," PhD course in collaboration with Hans Hüttel, PhD level, AAU "Matematik for Computer Grafik," course at 5th semester of the Study of Medialogy and the 7th semester of the Study of Computer Science, 5 ECTS, bachelor level, AAU "IT-Matematik," 1st semester of the studies Bachelor of IT (BAIT) and Informatics, 5 ECTS, bacholor level, AAU Supervision of PhD student Casper Thomsen. Project in coding theory and network coding. PhD level, AAU "Order domain codes and affine variety codes," five hours course given at International School and Conference on Coding Theory, CIMAT, Guanajuato, Mexico, November 28 - December 4. Master level. Spring 2008: Supervision of students writing a project in coding and information theory, 4th semester of the Study of Mathematics, 15 ECTS per group, bachelor level, AAU "Computeralgebra," course for newly employed high-school teachers with a bachelor degree in Mathematics, continuing education, 5 ECTS, continuing education, AAU Supervision of PhD student Casper Thomsen. Project in coding theory and network coding. PhD level, AAU Autumn 2007: "Matematik for Programmører," course at 7th semester of the Study of Computer Science, 5 ECTS, bachelor level, AAU "Matematik" course at 1st semester of the Study Bachelor of IT

(BAIT), 5 ECTS, bachelor level, AAU Supervision of PhD student Casper Thomsen. Project in coding theory and network coding. PhD level, AAU Spring 2007: "Kodnings og informationsteori," course at 4th semester of the Study of Mathematics, bachelor level, AAU "Computeralgebra," course at 4th semester of the Study of Mathematics, 5 ECTS, bachelor level, AAU "Datalogiens matematiske grundlag," course at 2nd semester of the Study of Computer Science, 5 ECTS, bacholor level, AAU Autumn 2006: Supervision of students writing a project in cryptography, 1st semester of the Study of Mathematics, 15 ECTS, bachelor level, AAU "Matematik for Programmører," course at 7th semester of the Study of Computer Science, 5 ECTS, bachelor level, AAU Spring 2006: "Kodnings og informationsteori," course at 4th semester of the Study of Mathematics, 2.5 ECTS, bachelor level, AAU "Computeralgebra," course at 4th semester of the Study of Mathematics, 5 ECTS, bachelor level, AAU Autumn 2005: "Datalogiens matematiske grundlag," course at the two months introduction program for the Bachelor of Science study, 5 ECTS, bachelor level, AAU "Matematik for Programmører," course at 7th semester of the Study of Computer Science, 5 ECTS, bachelor level, AAU Spring 2005: "Kodnings og informationsteori," course at 4th semester of the Study of Mathematics, 2.5 ECTS, bachelor level, AAU "Datalogiens matematiske grundlag," course at the two months introduction program for the Bachelor of Science study, 5 ECTS, bachelor level, AAU Autumn 2004: "Algebra", 3rd semester of the Study of Mathematics, bachelor level, 2.5 ECTS, bachelor level, AAU "Matematik for Programmører," course at 7th semester of the Study of Computer Science, 5 ECTS, bachelor level, AAU "Datalogiens matematiske grundlag," course at the two months introduction program for the Bachelor of Science study, 2.5 ECTS, AAU Supervision of Master degree project in coding theory (in collaboration with Christian Thommesen), 15 ECTS, master level, AAU Spring 2004: "Kodnings og informationsteori," course at 4th semester of the Study of Mathematics, 2.5 ECTS, bachelor level, AAU Supervision of students writing a project in coding and information theory, 4th semester of the Study of Mathematics, 15 ECTS per group, bachelor level, AAU Supervision of Master degree project in coding theory (in collaboration with Christian Thommesen), 15 ECTS, master level, AAU Autumn 2003: "Fejlkorrigerende koder," course at the "Livslang uddannelse"-program, continuing education, 2 ECTS, AAU "Computeralgebra," course at 5th semester of the Study of Mathematics, 5 ECTS, bachelor level, AAU Supervision of students writing a project in coding theory (in collaboration with Christian Thommesen), 7th semester of the mathematics study, 15 ECTS, master level, AAU "Datalogiens matematiske grundlag," course at the two months introduction program for the Bachelor of Science study, 2.5 ECTS, AAU Spring 2003: "Computeralgebra," course for newly employed high-school teachers with a bachelor degree in Mathematics, 5 ECTS, continuing education, AAU "Kodningsteori," course at 6th semester of the Study of Mathematics, 2.5 ECTS, bacelor level, AAU "Matematik for økonomer - 2," course at 4th semester, cand oecon (economics), 5 ECTS, bachelor level, AAU Autumn 2002: "Datalogiens matematiske grundlag," course at the two months introduction program for the Bachelor of Science study, 5 ECTS, AAU "Matematik for økonomer - 1," course at 3rd semester, cand oecon (economics), 5 ECTS, 5 ECTS, bachelor level, AAU Spring 2002: "Datalogiens matematiske grundlag," course at the two months introduction program for the Bachelor of Science study, 2.5 ECTS, AAU, Esbjerg Campus "Matematik for økonomer - 2," course at 4th semester, cand oecon (economics), 5 ECTS, bachelor level, AAU Autumn 2001: "Datalogiens matematiske grundlag," supervision of projects at the two months introduction program for the Bachelor of Science study AAU, 5 ECTS per group, Esbjerg Campus "Matematik for økonomer - 1," course at 3rd semester, cand oecon (economics), 5 ECTS, bachelor level, AAU Spring 2001: Supervision of Master degree project in coding theory, (in collaboration with Christian Thommesen), 15 ECTS, Master level, AAU "Matematik for økonomer - 2," course at 4th semester, cand oecon (economics), 5 ECTS, bachelor level, AAU Autumn 2000: "Datalogiens matematiske grundlag," course at the two months introduction program for the Bachelor of Science study AAU, 3 ECTS, Esbjerg Campus "Matematik for økonomer - 1," course at 3rd semester, cand oecon (economics), 5 ECTS, bachelor level, AAU Spring 2000: "Matematik for økonomer - 2," course at 4th semester, cand oecon (economics), 5 ECTS, bachelor level, AAU Autumn 1999: "Matematik for økonomer - 1," course at 3rd semester, cand oecon (economics), 5 ECTS, bachelor level, AAU "Turbokursus," highschool math for students about to enrole at Aalborg University, 1.5 ECTS, AAU

## 2. Study administration

STUDY ADMINISTRATION SINCE 2015 Spring 2022 Vice dean for Education at the Faculty of Engineering and Science Autumn 2021 Vice dean for Education at the Faculty of Engineering and Science Spring 2021 Vice dean for Education at the Faculty of Engineering and Science Autumn 2020 Vice dean for Education at the Faculty of Engineering and Science Spring 2020 Vice dean for Education at the Faculty of Engineering and Science Autumn 2019 Vice dean for Education at the Faculty of Engineering and Science Spring 2019 Vice dean for Education at the Faculty of Engineering and Science Autumn 2018 Vice dean for Education at the Faculty of Engineering and Science Spring 2018 Vice dean for Education at the Faculty of Engineering and Science Autumn 2016: Coordinator and driving force in the development project "first.math" which involves almost all first year mathematics course at all faculties of Aalborg University (Aalborg, Copenhagen and Esbjerg campuses) Semester coordinator for the 1st semester of the mathematics and the mathematics-economics study, AAU Spring 2016: Semester coordinator for the 2nd semester of the mathematics and the mathematics-economics study, AAU Coordinator and driving force in the development project "first.math" which involves almost all first year mathematics course at all faculties of Aalborg University (Aalborg, Copenhagen and Esbjerg campuses) Autumn 2015: Semester coordinator for the 1st semester of the mathematics and the mathematics-economics study, AAU Coordinator and driving force in the development project "first.math" which involves almost all first year mathematics course at all faculties of Aalborg University (Aalborg, Copenhagen and Esbjerg campuses) Spring 2015: Coordinator and driving force in the development project "first.math" which involves almost all first year mathematics course at all faculties of Aalborg University (Aalborg, Copenhagen and Esbjerg campuses) STUDY ADMINISTRATION BEFORE 2015 Since 2012 coordinator and driving force in the development project "first.math" which involves almost all first year mathematics course at all faculties of Aalborg University (Aalborg, Copenhagen and Esbjerg campuses) Semester coordinator at all levels of the mathematics and the mathematics-ecnomics study (bachelor and master)

## 3. University pedagogy qualifications

"One-day seminar for experience PhD supervisors AAU," Conducted by Mirjam Godskesen, Scheelsminde, Aalborg, June 2nd, 2015 "Adjunktpædagogikum," 2001-2002, PUC, Aalborg University

## 4. Other qualifications

"University Teaching Day," participation 2014 and every year since 2018

## 5. Teaching activity development and teaching materials

As vice dean I am deeply involved in various development tasks which are too many to list here. Activities prior to appointment as vice dean: In connection with the development project "first.math" (see the web page first.math.aau.dk) I have since 2012 been engaged in the development of many kinds of new teaching material. This involves web resources, teaching videos, pen casts, screen casts etc. Many of the teaching activities mentioned under item 1 (Teaching CV) have been developed by me in collaboration with colleagues. This includes the courses "BasalMat", "Matematik for Programmører", "Matematik for Computer Grafik" and "Integrals and Differential Equations,", as well as the project module "Kodnings og Informationsteori".

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

N/A

## 7. Personal reflections and initiatives

As a vice dean I do not have to teach, but I have chosen to undertake various teaching tasks in particular during the Covid crisis. This is to better understand what are the challenges and opportunities in connection with implementing elements of e-learning and to keep my PBL-spirit alive. I have received good feed back from my students regarding the videos that I have produced for a recent course. However, some students find them so useful that they do not show up in the classroom. To overcome that problem and to improve my course teaching in general I will seek to develop the format of my exercise sessions in such a way that the students interact more.

## 8. Any other information or comments

NA