

Teaching portfolio

1. Teaching CV: A list of teaching and supervision tasks, including specification of academic fields, scope, level (bachelor, master, continuing education, PhD). Please state the teaching method used (e.g. lecture, class teaching, exercises, supervision, examination, coexamination, distance teaching, internet-based teaching and evaluation of teaching). Please also indicate the language of instruction.

LECTURES HELD AT AALBORG UNIVERSITY

(Ordered alphabetically, Danish titles translated to English, only lectures whose content I was fully responsible for)

- Complex Functions. AAU, F2019, F2020, F2023 and F2024, Mathematics 4th semester and Mathematics-Technology 6th semester (i F2019) (BA), 100% in F2019, F2020 and F2024 and 50% in F2023 of a 5 ECTS course, in Danish
- Integration Theory and Hilbert Spaces. AAU, F2021, F2022 and F2023, Mathematics, Mathematics-Technology and Mathematics-Economy 6th semester (BA), 5 ECTS, in Danish
- Introduction to Partial Differential Equations. AAU, E2019, Mathematics 7th semester and Mathematics-Economy 5th semester (BA/KA), 5 ECTS, in Danish
- Measure Theory and Stochastic Processes. AAU, E2018, E2019, E2020 and E2021, Mathematics and Mathematics-Economy 7th semester (KA), together with Orimar Sauri, 75% in E2018-E2020 and 66% i E2021 of a 5 ECTS course, in Danish
- Stochastic Analysis. AAU, E2022, Mathematics and Mathematics-Economy 7th semester (KA), together with Orimar Sauri, 50% of a 5 ECTS course, in Danish
- Topics in Mathematical Analysis (section on Spectral Theory). AAU, E2017, Mathematics 9th semester (KA), 4 sessions within a 5 ECTS course, in Danish

DIGITALIZED COURSE

- Partial Differential Equations. AAU, F2023, F2024, Mathematics 8th semester (KA), video lectures with exercises, 5 ECTS, in Danish and English

PROJECT SUPERVISION AT AALBORG UNIVERSITY

(Ordered according to study semester, Danish titles translated to English)

- Intermediate Application Oriented Mathematics (Partial Differential Equations). AAU, F2023, Mathematics 8th semester (KA) (1 group), 15 ECTS
- Bachelor project in Mathematics (on tempered distributions). AAU, F2018, 6th semester (1 student), 15 ECTS
- Bachelor project in Mathematics-Technology (applications of statistics and stochastic geometry). AAU, F2018, 6th semester (2 groups), 15 ECTS
- Bachelor project in Physics (Ising-model in 2D). AAU, F2021, 6th semester (BA) (1 group), 10 ECTS
- Signals and Systems. AAU, F2019, F2020, F2021, F2022, Mathematics-Technology 4th semester (BA) (3 groups in F2019-2022), together with Peter Koch, 15 ECTS
- Dynamical Systems. AAU, E2021, E2022, Mathematics-Technology 3rd semester (BA) (3 groups in E2021, 2 in E2022), together with John Leth, 15 ECTS
- Ordinary Differential Equations. E2017, E2018, E2019, E2020, E2023, Mathematics and Mathematics-Economy 3rd semester (BA) (2 to 3 grupper), 15 ECTS

SERVICE-TEACHING AT AALBORG UNIVERSITY (BA)

(Centrally organised course with prescribed literature and content)

- Calculus. AAU Campus Copenhagen, F2018, Sustainable Biotechnology 2nd semester and Management and Operations Engineering 4th semester, 5 ECTS, in English
- Calculus for Robotics. AAU Campus Aalborg, F2019, Robotics 2nd semester, 5 ECTS, in English
- Mathematics for Multimedia Applications. AAU Campus Aalborg, F2018 and F2019, Medialogy 3rd semester, together with Morten Grud Rasmussen, 50% of a 5 ECTS course, in English
- Calculus (modular course, 5 ECTS, in Danish): F2021 (100%, Health Technology and Land Surveying 2nd semester), E2022 (37,5%, Construction Engineering as well as Mechanics and Production 1st semester), F2023 (37,5%, Health Technology 2nd semester), E2023 (2 x 50% + 25%, Construction Engineering, Geography, Physics, Mathematics and others in their 1st semester), F2024 (100%, Health Technology and others in their 2nd semester)
- Linear Algebra (modular course, 5 ECTS, in Danish): E2020 and E2021 (75%, Health Technology 1st semester), F2022 (5 workshops, Data Science, Mathematics, Mathematics-Technology, Mathematics-Economy 1st semester), E2022 (2 x

25% + 12,5%, Health Technology, Land Surveying and others in their 1st semester), E2023 (37,5% Health Technology and others in their 1st semester)

INTERNAL CENSOR AT AALBORG UNIVERSITY: Diverse tasks

EXTERNAL CENSOR: Referee of a dissertation theses (Jena University, 2022), referee of a bachelor thesis (Aarhus University, 2023)

PhD STUDENT: 1 at Aarhus University (Jonas Dahlbæk, 2017; co-advised by Jacob Schach Møller)

BA STUDENTS (NOT AT AAU): 2 at LMU Munich

KA (MASTER) STUDENT: 1 at Aarhus University

LECTURES HELD AT UNIVERSITIES OTHER THAN AAU

(Ordered alphabetically, English and German titles translated to Danish)

- Advanced Complex Function Theory. Lecture with exercise session, Aarhus University, fourth quarter 2015, Mathematics 7th and 9th semester (KA), 3+1 hours/week, in English
- Analysis I for Physicists. Lecture, TU Munich, winter term 2010/11, Physics 1st semester (BA), 4 hours/week, in German
- Analysis II. Lecture, TU Clausthal, summer 2009, Mathematics, Physics and others in their 2nd semester (BA), 4 hours/week, in German
- Analysis III (thematic focus: vektor analysis, differential forms, Stokes' theorem, Fourier series). Lecture and tutorial, LMU Munich, winter term 2006/07, Mathematics 3rd semester (Diplom), 4+2 hours/week, in German
- Analysis III (thematic focus: measure and integration theory, ordinary differential equations). Lecture, TU Clausthal, winter term 2009/10, Mathematics and Physics 3rd semester (BA), in German
- Analysis of Operators. Lecture, Aarhus University, first quarter 2017, Mathematics 10th semester (KA) and PhD, 6 hours/week, in English
- Complex function theory. Lecture with exercise session, TU Clausthal, summer term 2010, Mathematics and Physics 4th semester (BA), 3+1 hours/week, in German
- Operator Algebras. Lecture with seminar, LMU Munich, summer term 2012, Mathematics 6th semester (BA) as well as Theoretical and Mathematical Physics 8th semester (MA), 2+0,5 hours/week, in English
- Ordinary Differential Equations. Lecture and tutorial, LMU Munich, summer term 2008, Mathematics and Physics 4th semester (Diplom), 4+2 hours/week, in German
- Partial Differential Equations I. Lecture, TU Clausthal, summer term 2009, Mathematics 4th and 6th semester (BA), 2 hours/week, 4 ECTS, in German
- Partial Differential Equations II. Lecture, TU Clausthal, winter term 2009/10, Mathematics 5th and 7th semester (BA/MA), 2 hours/week, 4 ECTS, in German
- Quantum Theory (thematic focus: mathematical methods). Lecture, Aarhus Universitet, first and second quarter 2013, Mathematics 8th and 10th semester as well as PhD, together with Jacob Schach Møller, 50% = 2 hours/week, in English
- Spectral analysis of non-relativistic QED. Lecture, Aarhus University, third and fourth quarter 2014, Mathematics 9th semester (MA) and PhD, in English

TUTORIALS AND EXERCISE SESSIONS (NOT AT AAU)

(supplementing lectures held by other university teachers, ordered chronologically, English and German titles translated to Danish)

- winter term 1998/99: Higher Mathematics I for Industrial Engineers. Two exercise sessions, TU Berlin, Industrial Engineering 1st semester (Diplom), 2+2 hours/week, in German
- summer term 1999: Higher Mathematics III for Engineers. Three tutorials, TU Berlin, various engineering students in their 3rd semester (Diplom), 2+2+2 hours/week, in German
- winter term 2000/01: Analysis I. Exercise session, JGU Mainz, Mathematics 1st semester (Diplom), 2 hours/week, in German
- winter term 2001/02: Analysis II. Exercise session and tutorial, JGU Mainz, Mathematics and Physics 2nd semester (Diplom), 2+2 hours/week, in German
- summer term 2002: Analysis III. Exercise session and tutorial, JGU Mainz, Mathematics and Physics 3rd semester (Diplom), 2+2 hours/week, in German
- winter term 2002/03: Functional Analysis. Tutorial, JGU Mainz, Mathematics 5th semester (Diplom), 3 hours/week, in German
- summer term 2003: Mathematics for Physicists I. Tutorial, JGU Mainz, Physics 1st semester, 3 hours/week, in German
- winter term 2003/04: Analysis II. Tutorial, JGU Mainz, Mathematics 2nd and 3rd semester, 2 hours/week, in German
- summer term 2004: Mathematical Methods in Physics: Quantum Mechanics. Tutorial, LMU Munich, Mathematics and Physics 8th and 10th semester (Diplom), 2 hours/week, in English
- winter term 2005/06: Analysis I for Mathematicians. Tutorial and two exercise sessions, LMU Munich, Mathematics 1st semester (Diplom), 2+2+2 hours/week, in German

- summer term 2006: Analysis II for Mathematicians. Tutorial and exercise session, LMU Munich, Mathematics 2nd semester (Diplom), 2+2 hours/week, in German
- summer term 2007: Ordinary Differential Equations. Two tutorials, LMU Munich, Mathematics and Physics 4th semester (Diplom), 2+2 hours/week, in German
- winter terms 2007/08 and 2008/09: Mathematical Quantum Mechanics. Tutorial and exercise session, LMU Munich, Theoretical and Mathematical Physics 7th semester (MA), 2+2 hours/week, in English
- summer term 2011: Functional Analysis. Tutorial and exercise session, LMU Munich, Mathematics 6th semester (BA), 2+2 hours/week, in German
- winter term 2011/12: Partial Differential Equations. Tutorial and exercise session, LMU Munich, Mathematics 5th semester (BA) as well as Theoretical and Mathematical Physics 7th semester (MA), 2+2 hours/week, in English
- Eight quarters in 2012 - 2016: Teaching assistant at Matematiklaboratoriet (mathematics-café: help for students solving exercises in Calculus and Linear Algebra), Aarhus Universitet

INTERNAL CENSOR (NOT AAU, 2000 - 2017): Many, diverse tasks at JGU Mainz, LMU Munich, TU Clausthal, TU Munich and Aarhus University

2. Study/programme administration and management: Experience in programme management and coordination. A list of study administration tasks, e.g. study board membership, chair of study board, semester or course coordinator, accreditation tasks, etc. Experience in planning teaching activities. Experience in programme development. Participating in committees and commissions etc. on education issues.

Member of the study board at the Institute of Mathematical Sciences at AAU (since 2019).

Semester coordinator for 7th and 9th semester Mathematics and Mathematics-Economy (E2020, E2021, E2022).

Head of "Undervisningsudvalget" at the Institute of Mathematical Sciences at AAU (F2023, E2023, F2024)

3. Formal pedagogical training: A list of completed courses in university pedagogy, PBL courses, workshops, academic development projects, collegial guidance and supervision, etc. Written assessment from the course in university pedagogy for assistant professors. Participation in conferences on pedagogy and didactics. Please enclose any documentation of the above, such as course certificates, references, etc

Habilitation, University of Munich, 24th of January 2022

4. Other qualifications: Conference contributions and attendance, contributions to debates, scientific articles on pedagogical issues etc. Peer supervision, editorials, mentoring experience or other types of competence development activities.

Type your answer here...

5. Pedagogical development and research: Development of new courses, teaching materials, teaching methods, examination types or other types of pedagogical development. Didactic and pedagogical research. Cooperation with external collaboration partners.

Author of lecture notes (that are/were available online for my students) to

- Analysis I (Differential- and integral calculus in one dimension, metric spaces), in German
- Analysis II (Differential calculus in several variables, submanifolds and applications), in German
- Analysis III (Vector analysis, differential forms, Stokes' theorem), in German
- Introduction to partial differential equations, in Danish
- Introduction to operator algebras, in Danish
- Complex function theory, in Danish
- Measure and integration theory, in English
- Special topics in the analysis of operators, in English
- Spectral theory of non-relativistic QED, in English
- Stochastic analysis, in English
- Ordinary differential equations, in German
- Unbounded operators, in English

Development of numerous exercises on essentially all analytics topics taught in a Mathematics study program (since

2000)

Development of workshops on Linear Algebra for Health Technology.

Production of videos on topics in Complex Function Theory during the Covid19 pandemic.

Together with Orimar Sauri: Development/Update of the modules Integration theory and Hilbert spaces, Stochastic Analysis and Stochastic Calculus

6. References on your teaching skills from superiors or colleagues. Teaching evaluations and any teaching awards received.

‘Teacher of the year 2021’ at the Institute of Mathematical Sciences at AAU.

7. Personal reflections and initiatives: Here you may state any personal deliberations as regards teaching and supervision, any wishes and plans for further pedagogical development, plans for following up on student feedback/evaluations, etc. Personal reflections on your own pedagogical practice, including objectives, methods and implementation. This should include an analysis and a reasoned description of your pedagogical activities in relation to your pedagogical understanding and student learning. Thoughts on the teaching method at Aalborg University (which is largely based on group-organised project work and problem-based learning)

Type your answer here...

8. Any other information or comments.

Type your answer here...