

## 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.**

Qualifier: From Juli 2001- August 31st 2017 I was on the payroll as dean at SDU and from September 1st. 2017-October 31st. 2022 as dean at AAU. I am Professor at Department of Mathematical Sciences at AAU from November 1st 2022 - October 31st. 2023 with no teaching obligations. After that I have normal obligations as Professor. From 1985-2001 I taught at OU/SDU a substantial part of a generic Mathematics Curriculum plus 18 different Graduate Courses. Supervisor for 21 Bachelor Projects, 22 Master Dissertations, 4 Ph.D. Theses and 10 Post Docs. Most of my teaching was lectures in Danish with some exercise classes but in the last few years I replaced some lectures by group work with me as supervisor. I was responsible for examination of all my taught classes and I acted as external examiner at AU, DFH, DTU, Paris VI and other places.

**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.**

2017-2022: Chair of the Advisory Board for the UNESCO Center for PBL at AAU 2001-2022: As Dean I have been responsible for all accreditations at SDU and AAU although at AAU with Associate Dean for Education as wing man. 1992-95: Chairman, Ph.D. Board, Depart. Math. and Comp. Sci., SDU; Study leader and Chairman of the Ph.D. Board of The Faculty of Science, SDU: Creating the Ph.D. School (working for Dean Jens Oddershede) 1988-91: Member, Board of Education, Faculty of Science, OU I Planned all my teaching myself except the first year teaching in Calculus and Linear Algebra. All my Graduate Courses I developed myself. Initiatives Towards Schools 2017: Host at SDU for 70 Talents from 5 HF Schools in Denmark. 2012: "Kickstart of Biotechnology in Upper Secondary Education", Meeting, evaluating a Pilot Project initiated by Sct. Knuds Gymnasium, Rosborg Gymnasium and myself. Co-funded with 8 mill. DKK. from the Region of Southern Denmark 2009: Tour de Gymnasium, Visiting Esbjerg Gymnasium, Nykøbing Falster Gymnasium, HTX Aabenraa, Midtfyns Gymnasium 2008: Seven Meetings about Collaboration, Tornbjerg Gymnasium, Odense Tekniske Skole, Svendborg Gymnasium, Aabenraa Gymnasium, Rosborg Gymnasium, Grindsted Gymnasium, Fredericia Gymnasium 2005: Opening af LUNA, "Collaboration between SDU, The School of Engineering, Odense Tekniske Skole and with the Industry in the Region" 2004: ATV, "The Reform of The Grammar School – Remember Science, Please" 2004: DI Conference, "Science in a Globalized World – The Reform of The Grammar School and The Scientific and Pedagogic Evolution" 2004: Nordfyns Gymnasium and Rosborg Gymnasium, "The Modern University and The Reform of The Grammar School" 1999: "Geometry and Science", For primary school 1999: "The Evaluation Report for Mathematics, Physics and Chemistry", Danish Mathematical Society, Aarhus University 1998: "Geometry and Complex Numbers", Naturvidenskabeligt Selskab Fyn 1998: "Udfordringerne til gymnasiets matematikundervisning i det 21. århundrede fra det danske velfærdssamfund", Talk given at the Seminar, Anvendelse af matematik og matematiske forskningsresultater i dansk erhvervsliv, Science Park, Odense 1998: "Geometry and Science", Stengårdsskolen and Håndværkerskolen, Hadsten 1998: "Projective and Space-time Geometry", Talk given in a meeting organised by The Association of High School Teachers in Mathematics, Odense 1997: "Geometry and Complex Numbers", Talk given in a meeting organised by The Association of High School Teachers in Mathematics, Duborgskolen, Flensborg 1995: "Geometry and Physics", Talk given in a meeting organized by The Association of High School Teachers in Mathematics, Sct. Knud Gymnasium 1994: "Mathematics at the University", Talk given in the Danish Group of "The International Commission on Mathematical Instruction", Denmark

**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**

1981: Qualified as teacher in Upper Secondary School your (Gymnasie-pædagogikum)

**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.**

2020-2022: Board Member in CESAER and Chair of Task Force "Linking STEM and SSH"; Working Member of Task Force "Future of Engineering" 2022: Talk at Paris Saclay, Conference on Engineering Education, with the contribution "The Future of Engineering" (Talk prepared together with AAU-UNESCO Center in PBL) 2021: Supervisor for CESAER Students in the competition "Best Idea".

## **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.**

2020-22: Member of the Board, Frederikshavn Gymnasium 2017-22: Member, Dean's College, Science and Engineering. 2015: Member of the Steering Group for Talent Education, SDU 2014-15: Member, Expert Panel for a National Talent Master Plan, Appointed by Universities Denmark 2014-15: Member, Board of Laboratory for Coherent Education and Learning, SDU-UCL 2011-15: Member, Danish Board of Sino-Danish Centre for Education and Research 2011: Member of the Expert Panel for The Shing-Tung Yau Mathematics Award (for young international mathematics talents just accepted for university studies), Tsinghua University, Beijing 2008-09: Member, Steering Committee, Art and Science, SDU 2007-15 :Chairman, Sct. Knuds Gymnasium 2004-15: Member, Dean's College, Science and Engineering. Chairman 2010-2015 2002-04: Member, Board of Representatives, Danish Institute for Secondary Education 2001-15: Member, Steering Committee for IT-Vest

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

1996: The Teaching Prize, Faculty of Science, Odense University

## **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)**

I have never taught using the AAU-model for PBL. However, I see it as the way research was carried out in the Atiyah Group in Oxford: Look outside mathematics in particular to High Energy Physics for good Problems. Make connections to colleagues in Physics. Get together and solve the problem whatever (mathematics) is needed. I have seen a couple of PBL-student-groups at AAU attacking problems from outside their core domain and solving by picking up what is needed of relevant discipline knowledge. Impressive! My own thoughts are probably not so developed, but I have discussed a bit with the chair of our Academic Board, Ivan Aaen and in particular with the folks from the UNESCO PBL-Centre at AAU and I am inspired by the following thoughts (Acknowledging Jamison, Kolmos and Holgaard): Complex societal challenges and increasing complexity of technological systems call for: -A hybrid mode of learning – integrating academic, market-driven, and community based knowledge modes. -New types of learning – inquiry-based, contextual, and transformative. - New curriculum designs – enhancing flexibility, variation and T- shaping of educations. Internationalisation enhances hybridity as well as contextual and transformative learning – thereby it is a core aspect in future engineering curricula. The power of digitalisation in combination with face-to-face communication and in situ experiences might move future engineering education to the next level of internationalisation. Impact on teaching from mission-driven research.

## **8. Any other information or comments.**

Type your answer here...