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.

Between 1999 – 2017 I was involved in 16 courses concerning Hydraulics, Waves, Wave loads and ship motions at all levels (BSc, MSc and PhD) at Chalmers University of Technology (Sweden). Since 2007 I have supervised 16 MSc and 2 BSc thesis projects and acted as main supervisor for one PhD student (J. Palm, PhD awarded 2017 - coupled mooring analysis) and co-supervisor for another 8 PhD students, as well as supervised 2 PostDocs. I am presently co-supervisor for a PhD student (J Andersen, AAU - hydrodynamic modelling of wave energy converters) and supervisor for one postdoc (G.V. Fernadez - trenching of mooring lines).

COURSES
PhD level courses taught at Chalmers
• "Introduction to Shipping" (2015). 7.5 credit points, 10 students. Dep. of Shipping and Marine Technology, Chalmers. Prepared and delivered five lectures about hydrodynamics as well as computer exercises. Evaluation of computer exercises.
• "Introduction to Spectral/hp Element Methods" (2012). 5 credit points, 3 students. Dep. of Shipping and Marine Technology, Chalmers. Designed, prepared and delivered the content of the course, the lectures and the computer exercises. Evaluation of computer exercises.
MSc level courses taught at Chalmers
• "Wave Loads and Seakeeping" (2013). 7.5 credit points, approx. 30 students. Dep. of Shipping and Marine Technology, Chalmers. Prepared and delivered four lectures about water waves.
• "Modelling and Problem Solving in Civil Engineering" (2012). 7.5 credit points, approx. 30 students. Dep. of Civil Engineering, Chalmers. Prepared and delivered two lectures and two computer exercise in numerical methods. Evaluation of computer exercises.
• "Waves and Coastal Structures" (2011). 7.5 credit points, 4 students. Dep. of Civil Engineering, Chalmers. Designed, prepared and delivered the content of the course, the lectures and the computer exercises. Evaluation of computer exercises and written examination.
• "Wave-Induced Loads and Ship Motions" (2010). 7.5 credit points, approx. 30 students. Dep. of Shipping and Marine Technology, Chalmers. Tutor of computer exercises. Evaluation of computer exercises and written reports.
• "Water Wave Mechanics" (2007). 7.5 credit points, 3 students. Dep. of Water Environment Transport, Chalmers. Designed, prepared and delivered the content of the course, the lectures and the computer exercises. Evaluation of computer exercises, written reports and written examination.
• "Engineering Hydraulics" (1999–2002 and 2005–2006). 7.5 credit points, approx. 12 students. Dep. of Water Environment Transport, Chalmers. Tutor and computer exercises. Evaluation of computer exercises and written reports.
BSc level courses taught at Chalmers
• Hydraulics (2001–2002,2007). 7.5 credit points, approx. 120 students. Dep. of Water Environment Transport, Chalmers. Tutor for laboratory experiments. Evaluation of laboratory reports.

SUPERVISION
Post Docs
• Gael Verao Fernandez (2022-present): "Improved soil-cable interaction mooring simulations". Department of the Built Environment, Aalborg University. Main supervisor.
• Guilherme Moara Paredes (2017-2019): "Mooring Simulation of Wave Energy Devices". Department of Civil Engineering, Aalborg University. Main supervisor.

PhD students
• Jacob Andersen (2020-present): "Hydrodynamic Modelling of Offshore Renewables". Aalborg University. Assistant supervisor.
• Fenhshen Li (2021-2022): "Parametric analysis of Savonius hydrokinetic turbine wave energy converter operating under initial-phase locked strategy. Harbin University. Assistant supervisor.
• Umberto Bosi (2016-2020): "Medium fidelity hydrodynamic modeling of wave energy converters". Team Cardamon, INRIA-Bordeaux. Assistant supervisor.
• Johannes Palm (2012-2017): "Coupled mooring analysis using CFD for wave energy devices". Dep. of Shipping and Marine Technology, Chalmers. Main supervisor. Awarded PhD degree in 2017.
• Carlo Negrato (2016-2017): "Hull-propeller optimization using computational fluid dynamics". Dep. of Shipping and Marine Technology, Chalmers. Assistant supervisor.

• Ebrahim Ghahramani (2015-2017): "Cavitation modeling based on a DNS sub-grid scale model for bubble-bubble interaction and macroscopic mixture properties". Dep. of Shipping and Marine Technology, Chalmers. Assistant supervisor.
• Mohammad Hossein Arabnejad (2015-2017): "Simulation of the hydrodynamic
energy cascade in erosive cavitation". Dep. of Shipping and Marine Technology, Chalmers. Assistant supervisor.
• Sankar Menon (2014-2017): "Knowledge and methodology development for the analysis of air cavity ships". Dep. of Shipping and Marine Technology, Chalmers. Assistant supervisor.
• Guilherme Moara Paredes (Guest PhD student from Porto; 2012-2013):
"Study of mooring systems for offshore wave energy converters". Acting supervisor during Guilherme's stay at Chalmers. Awarded PhD degree 2016.

MSc thesis project
• MIkkel House and Mathias Wilsfort Lund (2023): "Effects of permeability of rubble mound breakwaters on overtopping discharge". Department of the Built Environment, Aalborg University. Assistant supervisor.
• Miguel Espinilla Soladana (2021): "Sensitivity analysis of a moored floating offshore wind turbine using a CFD based surrogate model". RISE - Research Institutes of Sweden. Main supervisor.
• Miguel Antón Aguilar (2020): "Simulation of wave energy conversion in a
multi-use platform". Department of Civil Engineering, Aalborg University. Main supervisor.
• Dimitrios Koukounas (2018): "Modelling of rogue waves". Department of Mechanics and Maritime Sciences, Chalmers. Main supervisor.
• Johnathan Eriksson (2017): "Simulation of the flow around a semisubmersible using CFD". Dep. of Shipping and Marine Technology, Chalmers. Main supervisor.
• Carlos Monteserin (2016): "Robust spectral element methods for free surface flows with structures". Dep. of Applied Mathematics and Computer Science, DTU. Assistant supervisor.
• Robin Eriksson and Erik Hall (2016): "Design of a mooring system for the Wavetube wave energy converter". Dep. of Shipping and Marine Technology, Chalmers. Main supervisor.
• Minghao Wu and Weizhi Wang (2016): "CFD analysis of the CorPower wave energy converter with verification and validation". Dep. of Shipping and Marine Technology, Chalmers. Main supervisor.
• Umberto Bosi (2015): "Finite element modelling of wave-floating body interactions". Dep. of Applied Mathematics and Computer Science, DTU. Assistant supervisor.
• Andreas Falkenstrøm Mieritz (2015): "Robust massively parallel free surface simulation using the spectral element method". Dep. of Applied Mathematics and Computer Science, DTU. Assistant supervisor.
• Martin Thunlid and Adam Olsson (2015): "Air-gap analysis for a semisubmersible using CFD": (2015). Dep. of Shipping and Marine Technology, Chalmers. Main supervisor.
• Behrad Gharraee (2015): "Simulation of cavitation on horizontal axis tidal turbines". Dep. of Shipping and Marine Technology, Chalmers. Main supervisor.
• Erik Doler¨od (2012): "Automated optimisation of a heaving point absorber". Dep. of Shipping and Marine Technology, Chalmers. Dep. of Shipping and Marine Technology, Chalmers. Main supervisor.
• Jonas Karlsson (2012): "Implementing anisotropic mesh refinement in OpenFOAM". Dep. of Computer Science, Chalmers. Assistant supervisor.
• Jonas Andersson (2011): "Simulation of wave induced forces on semi submerged horizontal cylinders using OpenFOAM". Dep. of Shipping and Marine Technology, Chalmers. Main supervisor.
• Mostafa Afshar (2010): "Numerical wave generation in OpenFOAM". Dep. of Shipping and Marine Technology, Chalmers. Main supervisor.
BSc thesis projects
• Andreas Dahlgren, Ziad Kairouz, Anders Larsson and Clas Thorsell (2014): "Design av kylvattenintag med reducerat tryck i kylvattensystemet". Dep. of Shipping and Marine Technology, Chalmers. Main supervisor.
• Dennis Book and Dan Lundell (2007): "Numerical solutions to Saint Venants equations: A one-dimensional model of a river section based on the discontinuous Galerkin method". Dep. of Water Environment and Transport, Chalmers. Main supervisor.

EXTERNAL EXAMINER
• Dong Chen, MSc thesis censor (DTU, 2023)
• Bardur Joensen, PhD thesis committee (DTU, 2023)
• Tobias Martin, PhD thesis committee (NTNU, 2021)
• Jacob B. Hicks, PhD thesis committee (DTU, 2021)
• Christian Windt, PhD thesis committee (Maynooth University, 2020)
• Liguo Wang, PhD thesis committee (Uppsala University, 2017)
• Linnea Sjöqvist, LicEng thesis, Discussion leader (Uppsala University, 2014)

2. Study administration: A list of any study administration tasks, e.g. study board membership, head of studies or semester or course coordinator, accreditation, etc.

N/A

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

I have completed five pedagogical courses (in total 15 credits points) given by
Engineering Education Research at Chalmers Univerity of Technology, Sweden:

- Teaching, Learning and Evaluation (2011, 3 credit points)
– Theory and Practice of Science (2011, 3 credit points)
– Supervision of Research (2011, 3 credit points)
– Writing for Publication and Constructive Alignement (2015, 3 credit points)
– University Teaching and Learning, (2015, 3 credit points)

4. Other qualifications: Conference attendance, editorials, presentations, etc. relating to education, 'University Teaching Day', etc.

I have attended the following workshops:
- AAU University Teaching Day (2018)

5. Teaching activity development and teaching materials: A list of any contributions to the development of new modules, teaching materials, study programmes, e-learning, collaboration with external business partners, etc.

Together with Prof. Sherwin (Dep. of Aeronatics, Imperial College London) I produced in 2005 a chapter "Introduction to Spectral/hp Element Methods for Hyperbolic Problems" (65 pages) for a short course given at van Karman Institute, Belgium. The course "CFD – Higher Order Discretization Methods" was aimed at PhD students and junior researchers in the field of computational fluid dynamics.

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

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.

8. Any other information or comments.