

## Undervisningsportfolio

**1. Undervisnings-CV: Oversigt over undervisnings- og vejledningsopgaver med angivelse af fagområder, omfang, undervisningsniveau (bachelor, kandidat, efter-/videreuddannelse, ph.d.). Type af undervisningsform angives, f.eks. forelæsning, holdundervisning, øvelse, vejledning, eksamination, censur, fjernundervisning, internetbaseret undervisning og evaluering af undervisning. Undervisningssprog angives.**

Teaching experience of supervision:

MSc2 (8 students, 2025 spring)

Topic 1: Design of 40 kW solid oxide electrolysis system for dynamic operations (Road2X)

Topic 2: Solid Oxide Electrolyzer Modelling For Dynamic Operations

MSc4 (4 students, 2025 spring)

Topic 1: Design and Dynamic Modelling of a 40 kW Solid Oxide Electrolysis System

Topic 2: Process Modelling and Optimization of Methanol-to-Jet for eSAF

Topic 3: Economical e-Methanol Production: Dynamic Modelling and Optimal Scheduling of Power-to-Methanol Plant

MSc3 (3 students, 2024 autumn)

Topic 1: Solid Oxide Cell 2D and 3D Modeling: Air-Side Focus on Rib-Channel Insights

Topic 2: Investigation of Maritime LNG-Fuelled HT-PEM Fuel Cell System With Carbon Capture

BSc (12 students, 2024 autumn)

Topic1: Modelling and Heat Integration of Maritime PEM Fuel Cell System with a Carbon Capture Unit

Topic2: Investigation and Modeling of Maritime Fuel Cell System

MSc4 (2 students, 2024 spring)

Topic1: Dynamic Modelling of the Absorber in a Fully Electrified Amine-Based Carbon Capture System with 99% CO<sub>2</sub> Removal

MSc2 (10 students, 2023 spring)

Topic1: Transient model and performance analysis of a direct ammonia-fed Solid Oxide Fuel Cell (SOFC)

Topic2: Offshore Green Hydrogen Production: An Economical Study on Implementation of Waste Heat Recovery

Master thesis (3 students, 2023 spring)

Topic1: Multiphysics Modeling of Alkaline Water Electrolysis

Topic2: Investigations of novel AC:DC dynamic operations on PEM electrolyser

Topic3: EVALUATION OF THE DECARBONIZATION POTENTIAL OF A METHANOL BASED FUEL CELL SYSTEM

MSc1 Intro project (6 students, 2022 autumn)

Topic: Analysis of water electrolyzer performance to produce hydrogen from Ocean wave energy harvester

MSc3 semester projects (internship in industrial partners, 3 students, 2022 autumn)

Topic1: Modeling of an Alkaline Electrolysis Cell with Modelica

Topic2: Modeling PEMWE in Python

Topic3: Characterizing three different methanol-based fuel cell systems

MSc2 semester project (5 students, 2022 spring)

Topic: Modelling of an Integrated Catalyst-Absorber Reactor for Ammonia Synthesis and Optimisation of a Synthesis Plant

MSc3 semester project (internship in industrial partners, 2 students, 2021 autumn)

Topic1: Dynamic Modeling of a high temperature PEMFC operating on reformed Methanol

Topic2: Empirical Thermal Model of Methanol Steam Reformer

MSc1 Intro project (5 students, 2021 autumn)

Topic: Modelling of cryogenic carbon capture process for biogas upgrading

Master thesis (4 students, 2021 spring)

Topic1: Techno-Economic Analysis of Green Methanol and Green BTX Production from Syngases

Topic2: Optimisation and Numerical Investigation of a Proton Conducting Ceramic Membrane Reactor for Hydrogen Extraction

MSc2 semester project (3 students, 2021 spring)

Topic: Energy storage system based on solid oxide electrolysis cells and biogas methanation (MESH)

MSc2 semester project (6 students, 2020 spring)

Topic: Optimisation and Integration of Sustainable Hydrogen Extraction from Carbohydrate Fuels through Electrochemical Conversion

Teaching experience at MSc courses:

Elective course: Analysis of Advanced Thermal Process Systems (TEPE3) (2022 autumn)

Topic: An introduction to Fuel Cell Systems, Water electrolysis systems and Power-to-X systems (two lectures).

Teaching experience at PhD courses:

Electrochemical Energy Conversion (2022 spring):

Topic: An introduction to Power-to-X (one lecture)

Examinations and co-examinations:

Examination for the above projects and courses (2020 - 2022)

Co-examinations of semester projects:

MSc1 Intro, 6 students, 2022 autumn

MSc3 1 student and MSc1 Intro 5 students, 2021 autumn

**2. Administration og ledelse af uddannelse: Erfaring med uddannelsesledelse og –koordinering. Oversigt over studieadministrative opgaver, eksempelvis medlem af studienævn, studieleder, semesterkoordinator, fagkoordinator, akkreditering m.v. Erfaringer med planlægning af uddannelsesafvikling. Erfaring med udvikling af uddannelser. Deltagelse i udvalg, kommissioner m.m. vedr. uddannelse.**

Skriv dit svar her...

**3. Formel pædagogisk uddannelse: Oversigt over gennemførte universitetspædagogiske kursusforløb, PBL-kurser, workshops, udviklingsprojekter, kollegial supervision o.l. Udtalelse fra universitetspædagogikum. Deltagelse i konferencer om pædagogik og didaktik. Dokumentation i form af kursusbeviser, udtalelser m.m. vedlægges.**

Skriv dit svar her...

**4. Andre kvalifikationer: Bidrag til konferencer, debatindlæg, videnskabelige artikler om pædagogiske emner m.v. Kollegiasupervision, redaktørarbejde, erfaring som mentor og anden kompetenceudvikling.**

Skriv dit svar her...

**5. Pædagogisk udvikling og forskning: Udvikling af nye kurser, undervisningsmateriale, undervisnings- og eksamensformer eller andet udviklingsarbejde. Didaktisk og pædagogisk forskning. Samarbejde med eksterne samarbejdspartnere.**

Skriv dit svar her...

**6. Udtalelser om undervisningskompetencer fra foresatte og kolleger. Undervisningsevalueringer og eventuelle udmærkelser for undervisningsvaretagelse.**

Skriv dit svar her...

**7. Evt. personlige refleksioner og initiativer: Personlige overvejelser knyttet til undervisning og vejledning, ønsker til og planer for pædagogisk videreudvikling, planer for opfølgning på undervisningsevalueringer m.v. Refleksioner over eget pædagogiske arbejde, dets målsætninger, metoder og gennemførelse. I refleksionen analyseres og motiveres dine pædagogiske aktiviteter i forhold til din pædagogiske forståelse og de studerendes læring. Tanker om undervisningsformen på Aalborg Universitet, der har et stort indhold af gruppeorganiseret projektarbejde og problembaseret læring (PBL).**

Skriv dit svar her...

## **8. Andet.**

Skriv dit svar her...