

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.

Academic courses taught (lectures)

Aug 2022 Biomass and biofuels, Aalborg University, Summer school for M.Sc. students (6 h)
Mar 2022 Liquefaction of biomass: fundamentals and practice, Aalborg University, Ph.D. course (4 h)
Oct 2020 Biomass conversion and biofuels, Aalborg University, M.Sc. 3rd sem., elective course (4 h)
Oct 2019 Catalytic upgrading of biocrude to drop-in fuels, Aalborg University, Summer school for the EU Horizon 2020 project "Hyflexfuel" (1 h)
May 2018 Thermochemical biomass conversion and upgrading, Aalborg University, Ph.D. course (4 h)
Jan-Jun 2016 Multiphase reactor technology, University of Twente, NL, M.Sc. 2nd sem. (20 h)
Apr-May 2012 Chemical and Food Engineering Fundamentals II, University of Trento, IT, B.Sc. 6th sem. (20 h)

Supervision of Ph.D. theses

2022 Alessandro Cascioli, Free University of Bolzano, IT, "Hydrothermal liquefaction of biomass and biocrude upgrading: fundamentals, experimental analysis and modelling" (Co-supervisor)
2018-21 Muhammad Salman Haider, Aalborg University, "Upgrading of HTL biocrudes to drop-in biofuels" (Co-supervisor)

Supervision of visiting (guest) students

20221 Ph.D. student from Free University of Bolzano, Italy
2021-221 Ph.D. student from Worcester Polytechnic Institute, USA
2018-191 Ph.D. student from University of Teheran, Iran

Supervision of B.Sc. and M.Sc. student projects

2022-23 Energy B.Sc. 3rd sem., "Solar Heating Reactor", 6 students
2022-23 M.Sc. 1st sem., "Separation of methanol/water mixtures from Power-to-X processes", 6 students
2022-23 M.Sc. 3rd sem., "Parametric Study of Continuous Hydrotreatment of Sludge Based Biocrude and Full Characterization of the Upgraded Products", 1 student
2021-22 M.Sc. 4th sem., "Cryogenic Carbon Capture of a Cement Plant Off-gas considering the Synergies of a PtX Integration", 2 students
2021-22 M.Sc. 3rd sem., "Techno-economic analysis of liquefied biogas upgrading methods", 1 student
2021-22 B.Sc. 3rd sem., "Distillation of a binary mixture in a batch distillation column", 6 students
2021-22 M.Sc. 1st sem., "Modeling of catalytic hydrotreating", 5 students
2019-20 M.Sc. 4th sem., "A simplified kinetic model for continuous hydrotreating of HTL biocrude", 2 students
2017-18 M.Sc. 4th sem., "Upgrading of Spirulina biocrude to drop-in fuels" (main supervisor: T.H. Pedersen), 1 student

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.

Type your answer here...

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

Education

- Ph.D. in Environmental Engineering (University of Trento, Italy, 2013)
- M.Sc. in Environmental and Territory Engineering (University of Basilicata, Italy, 2009)
- B.Sc. in Environmental and Territory Engineering (University of Basilicata, Italy, 2006)

Pedagogical courses completed

- University pedagogical program for Assistant Professors (Adjunkt pædagogikum), Aalborg University, Denmark, 10 ECTS.

Modules:

- oTeaching at a PBL University
- oPlanning and implementation of group instruction
- oThe use of IT media for learning and teaching
- oThe PBL group – collaboration, process and supervision
- oPlanning, development and quality assurance of study programmes
- oResearch integration
- oWorking with institutions and companies
- oPBL in engineering and science

Linguistic qualifications

- English for teaching (level C1), Aalborg University, Denmark (2020)

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.

Type your answer here...

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

Type your answer here...

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)

My personal approach to teaching relies on the central role of the student, whose scientific but also personal development is the actual goal of the entire education process. Teaching should aim at making the student autonomous, able to master the basic competencies and instruments by which he/she could be able to navigate any unknown problem. The student should feel as directly involved in the learning process, and not just as someone who is asked to deliver a certain performance in view of an exam.

In my view, an effective learning process cannot ignore the necessary sense of self-gratification that the student must experience while learning. To this purpose, it is important that, at the beginning, the student is given a problem to be solved, along with only some basic input on the way to address it: the "challenge". He/she will therefore be stimulated to find his/her own personal solution, which might be non-optimal or non-rigorous. However, this will give the student some basic knowledge and, especially, motivation and self-gratification for the preliminary result obtained, which puts him/her in the right disposition to learn more. At that point, the teacher can refine the developed knowledge introducing a more rigorous formalization: the "consolidation". At this stage, however, the teacher will have the advantage to address someone with already some preliminary understanding of the topic and, especially, who is interested to learn and improve. This teaching philosophy can be effectively adopted during PBL student project supervision, where it comes almost naturally. Indeed, when first confronted to a problem, the students try to develop their own personal solution based on limited input and their prior knowledge (challenge). In the subsequent meetings, the teacher can offer them a better

formalization of their solution and put it into a framework of more systematic theory (consolidation). As far as lectures are involved, the described approach could be obtained in different ways, for example by “flipped classroom”. In general, the overall concept is that learning is an iterative process, requiring successive steps of refining to be fully accomplished, and it must keep the motivation high throughout the entire process. The interaction between teacher and students is therefore fundamental and must be carried out on continuous basis. This forces to maximize the outcome of the teaching hours, which should not be utilized for mere slideshows (often redundant, since the students have already all materials available online) but serve to accomplish the cycle: challenge-consolidation.

8. Any other information or comments.

Type your answer here...