

Pedagogical experience

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Teaching experiences

The following is a list of my experiences in teaching in courses at university level, and the accompanying administrative duties and teaching material developments:

- **Statistical Mechanics (FYTN02)**, 2015 – 2017, *Lund University*
Together with the lecturer of the course (Prof. Anders Irbäck), I designed the computer exercise on Monte Carlo simulation of the evaporation/condensation transition within the context of a lattice gas model. I gave the introductory lecture (~ 30 min) to the exercise, was available for one-to-one discussions if the students wanted to further discuss and corrected the hand-in reports. The course was worth 7.5 credits and had 20–30 participants each year.
- **Quantum Field Theory (FYTN10)**, 2016 – 2017, *Lund University*
I supervised the weekly exercise session during which the students presented their solutions to a set of problems on the whiteboard to each other. I organised and supervised these sessions, 2h each, which in particular meant helping out the students when they got stuck, or show solutions that no student volunteered to present. The problems were picked/designed by me and the course lecturer (Dr. Eliel Camargo-Molina). I also delivered one and two of the regular lectures, respectively, during the two years I was involved in this course, and corrected a substantial number of the final exams. This course was worth 7.5 credits and had around 30 participants both years.
- **Multivariable analysis (MATB21)**, 2016, *Lund University, Lunds Tekniska Högskola*
This is an introductory course to multivariable analysis, taught at the mathematics institution that was offered jointly to physics, engineering and mathematics students as a part of their respective undergraduate programs. The course also served as an introduction to simple programming concepts. I was given the task of designing a computer exercise that would apply the pure mathematics course material to a physics problem that can be treated using basic programming in Python. This led me to construct an exercise on planetary orbits involving the first order corrections from general relativity to be solved in groups of 2–3 students. I wrote the exercise materials, gave an introductory mini-lecture (around 10 mins), corrected hand-in solutions and held oral examinations with the groups at the end of the course. The course was worth 7.5 credits and had around 50 participants.
- **Java programming (FYTA11)**, 2015, *Lund University*
I supervised a computer project where the mathematics of dynamical systems was applied to population dynamics. The work involved updating existing exercise materials, giving a short introductory lecture, supervising the students while they worked on the project and correcting hand-in reports. The course was worth 7.5 credits and had around 15 participants.
- **General Physics (FYSA21)**, 2014, *Lund University*
I co-supervised a weekly Matlab exercise session.
- **Introductory Physics (MNXA11)**, 2013, *Lund University*
This course is a part of the preparatory year for science programs (“Naturvetenskapligt basår”). I supervised the weekly mechanics laboratory exercises which I also partly designed.

Note in particular that I was involved in developing learning materials in the courses Introductory Physics (MNXA11), Java programming (FYTA11), Multivariable analysis (MATB21), Quantum Field Theory (FYTN10) and Statistical Mechanics (FYTN02).

Although I was not formally listed as a supervisor, I was deeply involved in thesis projects of four master's students. Their projects built on my PhD research project, and I provided guidance and concrete help with calculations several times a week.

I also have the following experiences in teaching outside the context of university course work:

- **Studybuddy**, 2012-09-07 – 2014-06-12, Malmö, Sweden

I worked as a private teacher in mathematics and physics at the upper secondary school level. I met with every student once week to help with their current home work problems. I typically had 1–2 sessions per week.

- **Lund University**, 2009 – 2013, Lund, Sweden.

I worked as an instructor at Forskarklubben ('the Research Club') and Upptäckarklubben ('the Discovery Club') which taught simple physics phenomena through experiments to children in the ages of 8–9 and 6–7 years, respectively.

Training in teaching

In 2014, I took an introductory course on teaching in higher education ("Högskolepedagogisk introduktionskurs") worth 3 credits.