TEACHING PORTFOLIO FOR KAARE LUND RASMUSSEN

Kaare Lund Rasmussen

Institut for Fysik, Kemi og Farmaci

Kemi og Farmaci

E-mail: klr@sdu.dk

Ansættelse

1. Formal educational training

Courses, supervision/mentoring received or given, study groups:

1) 2001-2006 I was employed half time as associate professor at DIG (Danish Institute for Gymnasium Pedagogics) at Institute of Philosophy, Pedagogics and Religious Studies at SDU, a centre which was later connected to NAMADI (Didactical Centre for the Natural Sciences and Mathematics) at SDU.

2) During my time at DIG/NAMADI I have participated in the teaching of pedagogics for upper secondary high school teachers (pædagogikum for gymnasielærer).

3) I have been working as SDU's representative in a joint venture with Odense Seminarium now University College Lillebælt (education of elementary school teachers), with the aim of producing a common platform, intended to make it possible for students at both institutions to change institution during their study at a relatively low cost in ECTS. A massive effort was put into this venture. For various reasons the system never went operational even though it had the support of the leadership at both SDU and Odense Seminarium.

4) I have written 3 text books for upper secondary high school, both alone and in collaboration with other authors (my publication list items C4, C5, and C6).

5) I have written one teaching text book for 8th and 9th year in elementary school (C7 in my publication list). For this book I received the 2002-award as the best text book writer from the Danish Department of Education (Undervisningsministeriets formidlingspris).

2. Administrative tasks relating to education

1) Member of the censor corps in physics (since 1988, now stepped out) and chemistry (since 2006) at all the Danish Universities. Various courses: Geophysics for geologists, for geographers, and for physicists; glaciology, geochemistry and climate courses, various master and Ph.D. theses at the Universities of Copenhagen, Southern Denmark, Århus University, Ålborg University, and Roskilde University.

2) Chairman of the board of Folkeuniversitetet (the Peoples University) in Odense (1993-1998). This involved planning of teaching at Folkeuniversitetet and various administrative duties including budgeting.

3) Member of the board of Folkeuniversitet in Svendborg (1999-2002).

4) Lecture given at the annual meeting for high school physics and chemistry teachers held at Roskilde University in 2001.

5) Planning of Ph.D.-courses at the Research School for Pedagogics at DIG/IFPR SDU.

6) Member of the board for Centre for University Pedagogic, SDU (2001-2002).

7) Member of the SDU sounding board for the construction of the science park Danfoss Universe (2001-2004).

8) Member of the selection committee for assistant professor positions at the University of Southern Denmark and Århus University (2002 and 2003).

9) Member of the Study Board for Pharmacy (Studienævnet) at FKF (2016-2017).

10) Chairman of the Teaching Committee (NUUF) for pharmacy (2018-).

3. Experience of study programs, supervision and examinations

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As bachelor at University of Copenhagen 1975-1982:

1.Instructor:Fysik G (1. year course):1975,1976,1977,1978

2.Instructor:Physics 3 (3. year course):1979

3.Instructor:Physics 1 (1. year course):1980,1981,1982

4.Laboratory exercises in digital signal processing1978

5.Astronomy 1, lectures in planetary physics:1979

After my master's degree:
As associate professor (adjunct), 1985-89, I planned and taught two new courses for the master level in geophysics. The first a course in planetary physics (book: J.T. Wasson, 1985: Meteorites). The second course was in reflection seismology (book: Waters: Reflection Seismology). Both courses were well attended, the course in planetary physics also by students from the Astronomical Observatory.

In 1988 I took over the mandatory field course in the physics of the solid Earth. It had previously been conducted on Bornholm. I revised the course and it was then conducted in north western Zealand. The course went very well and one of the students later made her master thesis in geoelectrical- and magnetic prospecting methods with me as supervisor.

At the University of Copenhagen 1986-1988:

1.1986:Lectures on reflection seismology (two lessons per week in a semester).

2.1986:Lectures on the Solar System seismology (two lessons per week in a semester).

3.1986:Arranged and conducted an excursion to the Stenlille drill site in connection with DONG's drilling operation (DONG = Danish Oil and Gas).

4.1987:Lectures on oil prospecting with special emphasis on the seismic methods (two lessons per week in a semester).

5.1987:Lectures on planets with special emphasis on the cosmic history of the element iron (two lessons per week in a semester).

6.1987:Arranged and conducted an excursion to the reflection-seismological field work of Prakla Seismos Gmbh on Zealand in connection with the seismic investigations carried out for DONG.

7.1988:Lectures on oil prospecting with special emphasis on the seismic methods (two lessons per week in a semester).

8.1988:Lectures on planets with special emphasis on the cosmic history of the element iron (two lessons per week in a semester).

9.1988:Arranged and conducted the mandatory field course in solid Earth Physics: Geophysical methods applied to quaternary deposits in North-West Zealand.

At Odense University 1991-1993:

1.1991 Physics 09 (Astronomy and planetary physics) (half of the course = 2 lessons per week in one semester).
2.1992 Physics 09 (Astronomy and planetary physics) (1/4 of the course = 1 lesson per week in one semester).
3.1993 Physics 09 (Astronomy and planetary physics) (1/4 of the course = 1 lesson per week in one semester).

At the University of Copenhagen 1999:

1999Participated in a course on dating techniques for geology students. It was a compact course (8 hours per day for 4 days). My part was in radiocarbon dating.

At The National Museum 1990-1991 and 1996-2001:

Teaching in the radiocarbon technique for high school classes, students from the Royal School of Conservation, and university students from geology and archaeology from the University of Copenhagen and the University of Arhus. Approximately 2 hours per week.

At the University of Southern Denmark 2001-2009:

1.Teaching pedagogic for new high school teachers (fall 2002 and 2003).

2.Environmental chemistry (KE-32) spring 2004. Two lectures per week for one semester. The course includes laboratory exercises in 4 hours per week for 4 weeks. See below in this section for student evaluation of this course.

3.Global environmental chemistry (KE-33/KEP-33) fall 2004. Four lectures per week. See below in this section for student evaluations of this course.

4.Chemistry A – General and organic chemistry (KE-04) fall 2004. Theoretical exercises for two classes (S4 and S11). Laboratory exercises for two classes (S1 and S3). See below in this section for student evaluations of these classes.

5.Project course in chemistry (KE-06) spring 2005. Individual projects in organic chemistry, inorganic chemistry, and environmental chemistry. The exam was to produce posters about the individual projects which were posted at the annual conference of the Danish Chemical Society. One of the students (Stine Magnussen) won the student posteraward price of the year.

6.Environmental chemistry (KE-32) spring 2005. Two lectures per week for one semester. The course includes laboratory exercises in 4 hours per week for 4 weeks.

7.Global environmental chemistry (KE-33/KEP-33) fall 2005. Four lectures per week.

8.Environmental chemistry (KE-32) spring 2006. Two lectures per week for one semester. The course includes laboratory exercises in 4 hours per week for 4 weeks.

9.Global environmental chemistry (KE-33/KEP-33 Global Change) fall 2006. Four lectures per week.

10.General first year chemistry (KE501, Basic chemistry) fall 2006. Laboratory exercises for two classes for 4 weeks.

11.Supplementary physics for upper secondary high school teachers (Sidefagssupplering i Fysik for gymnasielærere) spring of 2007. Compact course of 5 ECTS. This course is ¼ of the entire supplementary physics course for upper secondary high school teachers. The other parts taught by the universities in Copenhagen and Aarhus.

12.Introductory physics (FY501, Naturen i Bevægelse) fall of 2007 first quarter. Two lectures per week.

13.Supplementary physics for upper secondary high school teachers (Sidefagssupplering i Fysik for gymnasielærere) spring of 2008. Compact course of 5 ECTS. This course is ¼ of the entire supplementary physics course for upper secondary high school teachers. The other parts taught by the universities in Copenhagen and Aarhus.

14.Archaeometry (KE509) spring of 2008 first quarter. 5 ECTS. This course includes lectures 4 hours per week and laboratory work 2 hours per week for one quarter.

15.Teaching in the cross field of natural science and the humanities at Skårup Seminarium (elementary school teachers' education) spring of 2008.

16.Global Environmental Chemistry – Global Change (KE808). Fall 2008. 5 ECTS. New course replacing KE33. Dealing with environmental chemistry and geophysics on the subject of global climatic change. 28 hours of lectures, 14 hours of classes, 4 hours of theoretical exercise.

17.Lectures for Master program in natural science and didactics for elementary school teachers held at NAMADI. Fall of 2008.

18.Supplementary physics for upper secondary high school teachers (Sidefagssupplering i Fysik for gymnasielærere) spring of 2009. Compact course of 5 ECTS. This course is ¼ of the entire supplementary physics course for upper secondary high school teachers. The other parts taught by the universities in Copenhagen and Aarhus.

19.Archaeometry (KE509/KE520) spring of 2009 first quarter. 5 ECTS. The course is followed by both bachelor students (KE509) and master students (KE520). This course includes lectures 4 hours per week and laboratory work 2 hours per week for one quarter.

20.Archaeometry (KE509/KE520) spring of 2010 first quarter. 5 ECTS. The course is followed by both bachelor students

(KE509) and master students (KE520). This course included lectures 4 hours per week and laboratory work 2 hours per week for one quarter.

21.Philosophy of Science (NAT505) spring 2010. 5 ECTS. One of three teachers teaching philosophy of science including ethics in science research.

22.Archaeometry (KE509/KE520) spring 2011. 5 ECTS. The course is followed by both bachelor students (KE509) and master students (KE520). This course included lectures 4 hours per week and laboratory work 2 hours per week for one quarter.

23.Global Environmental Chemistry – Global Change (KE808). Fall 2011. 5 ECTS. Dealing with environmental chemistry and geophysics on the subject of global climatic change. 28 hours of lectures, 14 hours of classes, 4 hours of theoretical exercise.

24.Archaeometry (KE520/KE816) spring 2012. 5 ECTS. The course is followed by both bachelor students (KE507) and master students (KE816). This course included lectures 4 hours per week and laboratory work 2 hours per week for one quarter.

25.NAMADI master for elementary school teachers spring 2012. One double lecture.

26.Pharmaceutical basic course (KE527) fall 2012 and spring 2013. 10 ECTS. New course introducing analytical chemistry for pharmacy students, which I planned and executed at FKF. Also a teacher from biology. Lectures, classes and lab exercises. 21 hours of lectures, 19 hours of classes, 70 hours of laboratory exercises, shared between chemistry and biology.

27.NAMADI master for elementary school teachers spring 2013. One double lecture.

28.Analytical chemistry (KE514) spring 2013. 5 ECTS. One double guest lecture.

29.Pharmaceutical basic course (KE527) fall 2013 and spring 2014. 10 ECTS. New course introducing analytical chemistry for pharmacy students, which I planned and executed at FKF. Also a teacher from biology. 21 hours of lectures, 19 hours of classes, 70 hours of laboratory exercises, shared between chemistry and biology.

30.Global Environmental Chemistry – Global Change (KE808). Fall 2013. 5 ECTS. Dealing with environmental chemistry and geophysics on the subject of global climatic change. 28 hours of lectures, 14 hours of classes, 4 hours of theoretical exercise.

31.Analytical chemistry (KE514) spring 2014. 5 ECTS. One double guest lecture.

32.Archaeometry (KE520/KE816) spring 2012. 5 ECTS. The course is followed by both bachelor students (KE507) and master students (KE816). This course included lectures 4 hours per week and laboratory work 2 hours per week for one quarter.

33.Pharmaceutical basic course (KE527) fall 2014 and spring 2015. 10 ECTS. Course introducing analytical chemistry for pharmacy students. Also a teacher from biology. 21 hours of lectures, 19 hours of classes, 70 hours of laboratory exercises, shared between chemistry and biology.

34.Archaeometry (KE520/KE816) spring 2015. 5 ECTS. The course is followed by both bachelor students (KE507) and master students (KE816). This course included 24 lectures 18 hours of tutorials and 2 hours excursion.

35.Environmental chemistry A (KE507) fall 2015. 5 ECTS. Introductory course in environmental chemistry. 28 hours intro phase (lectures), 14 hours tutorial.

36.Archaeometry (KE520/KE816) spring 2016. 5 ECTS. The course is followed by both bachelor students (KE507) and master students (KE816). This course included 24 lectures 18 hours of tutorials and 2 hours excursion.

37.Chemistry of the elements (KE521) fall 2016. 5 ECTS. Introductory course in inorganic chemistry followed by four different studies: pharmacists, engineers, molecular biologist and biologists, encompassing ca 180 students. 28 intro phase, 8 tutorials, 20 laboratory exercises.

38.Environmental chemistry A (KE507) fall 2016. 5 ECTS. Introductory course in environmental chemistry. 28 hours intro phase (lectures), 14 hours tutorial.

39.Introduction to chemistry (KE536) fall 2016. 5 ECTS. One of four teachers in this introductory course for chemistry students. 4 intro phase, 4 tutorials, 32 lab execises.

40.Environmental chemistry A (KE507) fall 2017. 5 ECTS. Introductory course in environmental chemistry. 28 hours intro phase (lectures), 14 hours tutorial.

41.Chemistry of the elements (KE521) fall 2017. 5 ECTS. Introductory course in inorganic chemistry followed by four different studies: pharmacists, engineers, molecular biologist and biologists, encompassing ca 180 students. 28 intro phase, 8 tutorials, 20 laboratory exercises.

42.Introduction to chemistry (KE536) fall 2017. 5 ECTS. One of four teachers in this introductory course for chemistry students. 4 intro phase, 4 tutorials, 32 lab execises.

43.Archaeometry (KE520/KE816) spring 2018. 5 ECTS. The course is followed by both bachelor students (KE507) and master students (KE816). This course included 24 lectures 18 hours of tutorials and 2 hours excursion.

44.Environmental chemistry A (KE507) fall 2018. 5 ECTS. Introductory course in environmental chemistry. 28 hours intro phase (lectures), 14 hours tutorial.

45.Chemistry of the elements (KE521) fall 2018. 5 ECTS. Introductory course in inorganic chemistry followed by four different studies: pharmacists, engineers, molecular biologist and biologists, encompassing ca 180 students. 28 intro phase, 8 tutorials, 20 laboratory exercises.

46.Introduction to chemistry (KE536) fall 2018. 5 ECTS. One of four teachers in this introductory course for chemistry students. 4 intro phase, 4 tutorials, 16 lab execises.

47.Archaeometry (KE520/KE816) spring 2019. 5 ECTS. The course is followed by both bachelor students (KE507) and master students (KE816). This course included 24 lectures 18 hours of tutorials and 2 hours excursion.

48.Environmental chemistry A (KE507) fall 2019. 5 ECTS. Introductory course in environmental chemistry. 28 hours intro phase (lectures), 14 hours tutorial.

49.Chemistry of the elements (KE521) fall 2019. 5 ECTS. Introductory course in inorganic chemistry followed by four different studies: pharmacists, engineers, molecular biologist and biologists, encompassing ca 100 students. 28 intro phase, 8 tutorials, 28 laboratory exercises.

50.Introduction to chemistry (KE536) fall 2019. 5 ECTS. One of four teachers in this introductory course for chemistry students. 4 intro phase, 4 tutorials, 16 lab execises.

Supervision of Ph.D. projects: 8

Supervision of master projects: 34

Supervision of bachelor projects: 18

4. Methods, materials and tools

Teaching formats I have tried:1)Lectures for a large audience (> 100): FY501, KE521.2)Lectures for a small audience (≈ 20): KE32, KE33, KE509, KE5203)Examinations, class-like teaching of theoretical exercises : KE04, KE5074)Chemistry Laboratory exercises: KE04, KE501, KE527, KE521 5)Project based teaching: KE-066)Field work, both courses and teaching individuals: Field course in geophysics at university of Copenhagen, and supervision of master student projects in field work in archaeometry. Supervision methods that I usually use:I exercise a progressive degree of freedom in my supervision from bachelor students, over master students to PhD students. My supervision method is close to that of project based teaching. That is, initially the student is allow a very large space, which in dialog with me is narrow down to – the hopefully – right size and extent in time. I then hold regular meetings with the student, and always offer to read a chapter of the final thesis by choice of the student in order to give feedback on grammar, style, references, formula and how far the conclusions can hold. I usually only allow bachelor, master and PhD work with a considerable portion of experimental work. The reason for this selection is that I think chemistry in its best form is based on experiments – and also because it is in accord with the large infrastructure available at CHART. Teaching materials that I have produced:Materials include hand-outs, Web-material, compendia, books:1) Laboratory exercises notes in Environmental chemistry KE32, spring of 2007; Laboratory Manuals for Archaeometry lab exercises in KE520/KE816; Laboratory manual for KE527 Pharmaceutical basics course; Revision of reaching material including lab manual for KE521 Chemistry of the elements. 2) Hand-outs to all lectures that I have given – years ago usually handed out as power point output, now offered to be downloaded by the students at SDU web teaching platform Blackboard.3) Through my career I have written 4 text books for teaching in gymnasium and elementary school.

5. Educational development and applied research into teaching at university, including educational awards

1)Participation in educational development projects: Project from 2002-2005 on Teaching resources in particular physics textbooks (Læremiddelsforskning) financed by the governments Ministry of Education in Denmark by a grant to Finn Hauberg Mortensen and Kaare Lund Rasmussen. The project was part of a greater umbrella-project studying teaching resources. This involved 3 fully financed PhD projects in collaboration with Odense Zoo, the Marine Visitor Center at Kerteminde and Farm4U near Viborg from 2003-2005. I was supervisor for two of the PhD students (Zoo and Marine Visitor Center).

2)Educational (applied) research projects. During my 5 years at DIG/NAMADI I studied the development of physics textbooks over a time span of 40 years, from 1964 to 2001. The resulting publication is Rasmussen KLK (2003) "Fysik Fysik Fysik". It can found here:
https://www.sdu.dk/da/om_sdu/institutter_centre/ikv/formidling/gymnasiepeadagogik/udgaver.

3)Educational research training: I supervised two PhD students in the above mentioned Teaching Resources pedagogical research project.

6. Reflections on your own teaching practice and future development including student evaluations

My teaching philosophy is largely an open one, based on empathy and motivation. At university level the teacher has large and easy leverage by emphasizing the upcoming exam ("the stick method"). In my view, however, success in teaching relies on creating an open mind in the audience, which is then followed by a motivation. This is of course not always easy tasks, and sometimes it is not possible to obtain both objectives. One of the pitfalls is that two kinds of motivation can results from the efforts of the teacher: 1) situated motivation, and 2) long lasting motivation. Situated motivation is likely to evaporate with a fast rate after the teacher-student bond is broken after the teaching lesson. However, if the two goals are achieved, the teaching in my eyes becomes as satisfactory for both students and teacher as possible.

Reflections on how you have developed your teaching practice based on student evaluations and in interaction with students:

1) In most of my courses I have made students evaluations based on a questionnaire handed out by SDU. This feedback has of course been used in an iterative way to improve the courses.

2) For the Dean of Natural Science Faculty, Henrik Petersen, I have conducted a survey covering all first year students at the Natural Science Faculty.