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.

Student project supervision (1995 - now)

Supervisor of more than estimated 150 student projects on Masters and Bachelor levels in a large variety of themes in electrical and mechatronic engineering under the auspices of study programs offered by various AAU study boards in the period from 1995 until now.

Recent list of supervision tasks (no. of project groups)

2019: 4x Master; 6x Bachelor
2018: 3x Master; 7x Bachelor
2017: 4x Master; 6x Bachelor
2016: 7x Master; 4x Bachelor
2015: 10x Master; 1x Bachelor

2014: 7x Master; 3x Bachelor
2013: 5x Master; 5x Bachelor

Student lecturing tasks (1995 – now)

Have been responsible for planning, execution and examination of numerous courses on master and bachelor levels since 1995 in e.g. power electronics, digital electronics, micro-controllers, dynamics of electrical machines, computer-aided engineering, control theory, control of electric drives, optimization theory,electrical actuators, and mechatronics. Lectures are held mainly in English.

Recent list of lecturing tasks

Mechatronic System Design (6th sem. MCE bachelor)
Reguleringsteknik (5th sem. MP bachelor)
Models of power electronics and discrete control (5th sem. EE/MCE bachelor)
Mechatronics and discrete control (5th sem. EE/MCE bachelor);
Control Theory (1st sem. INTRO master)

Ph.D. supervision

Currently three Ph.D. students under supervision

Ph.D. / industrial course

Organizer and lecturer on a three-day Ph.D. course in advanced control of AC machines held several times in the period 2000-2006 with attendees from many European universities and companies.

External examiner tasks

2016: Adjudicator for written exam complaints in a control theory course held at University of Agder, Norway

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.

Revisions of study programmes

Have been heavily involved in definition and formal writing of course descriptions and project themes for past and current revisions of study programmes in mainly the Energy Study board; appointed by the Head of the Energy Study Board to participate in a committee at the School of Engineering and Science in order to re-organize the courses in Mathematics in the first two study years.

List of student coordinator tasks:

* Coordinator for 2nd sem. MCE master
* Coordinator for 5th sem. MCE bachelor; * Coordinator for 6th sem. MCE Diploma students

Study Board membership

Member of M-Study Board for a period in 2011-2012

Ad hoc to study secretaries

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

Supervisor for two Post Doc's (completed 2014 and 2016) participating in the University Pedagogy Course (Adjunktpædagogikum)

Ad-hoc mentoring of younger colleagues regarding e.g. teaching planning, execution, and conflict handling

Ad-hoc mentoring of master students seeking personal advice regarding career planning, study problems, etc.

Participation in the seminar "one-day seminar for PhD supervisors" held by Mirjam Godskesen in autumn 2015

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

Conference attendance
Participation in week-long conference in Austin, Texas, USA in August 2015 regarding instrumentation and data acquisition systems that are used heavily in many of my teaching activities

"Popular Science"
Contributor with a laboratory setup manned by students at "Dansk Naturvidenskabsfestival" and at "Forskningens Døgn" in Aalborg (2012-13-14) targeting high-school and elementary school pupils

Co-author of four papers focusing on university-level education
R. Teodorescu, M. M. Bech, F. Blaabjerg, and J. K. Pedersen, "Flexible Drive Systems Laboratory: a Modern Teaching Facility in Electrical Drives at Aalborg University," Proceedings of IEEE Nordic Workshop on Power and Industrial Electronics, Aalborg University, Denmark, June 2000, pp. 42-46

R. Teodorescu, M. M. Bech, F. Blaabjerg, and J. K. Pedersen, "A New Approach in Teaching Power Electronics Control of Electrical Drives using Real-Time," Proceedings of the 7th IEEE Workshop on Computers in Power Electronics, Virginia Tech, 16-18 July, 2000, Blacksburg, Virginia, USA. 2000, pp. 221-226.

R. Teodorescu, M. M. Bech, F. Blaabjerg, and J. K. Pedersen, "A Modern Laboratory for Teaching Electrical Drives at Aalborg University", Proceedings of E=TeM2, Liege, Belgium, March 2001

R. Teodorescu, M. M. Bech, A. H. Jensen, K. B. Larsen, F. Blaabjerg, J. K. Pedersen, "Advanced prototyping tools for project- and problem-based learning," Proceedings of PEMC'2002, Dubrovnik, Croatia. 2002.

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.

Development of teaching material for courses
For all course held since 1995:
Lecture slides and notes; course problem sets and extensive solution sets;continuous maintenance of on-line course resources such as Moodle and its predecessors; exams/re-exams sets for written exams, oral exams, and mini-projects;

Laboratory demonstrators/exercises
As a supplement to the material listed above, I have developed laboratory setups that facilitates the classical lecture in courses such as micro controllers, digital electronics, or control of AC machines with hands-on experience in the lab.

Development of teaching material for student projects
Project proposals
Planning and writing of numerous project proposals since 1995 for both bachelor and master study programmes. With only a very few exceptions, all my project proposals require laboratory work which must be taken carefully into consideration during the planning stage. Often, project proposals are coordinated with external companies.

Development of laboratory facilities for student project
To facilitate mainly student projects, I have designed, built (or re-built), instrumented, and programmed a number of laboratory setups, which have/still are used on both bachelor and master levels by either myself or by my colleagues. The references in section 4 list some of the older systems – of which some (with updates, though), still are in use.

As a more recent example, the "ball-on-tilting-beam" setup is currently used by bachelor student projects on both 4th and 5th semester. Besides the setup itself and its instrumentation, I have developed extensive documentation and coding examples demonstrating how many theoretical concepts are used in a real application. The setup is also used by students

as starting point for their own project work.

To help students to work on relatively complex laboratory setups, I have also developed a number of software projects that demonstrates how real-time controllers may be used for data acquisition and closed-loop control in real-time. This also includes many examples of how to connect e.g. actuators and sensors in the laboratory.

Co-author of a 26-page catalogue of examples illustrating the use of mathematics in engineering education
(This material is used on the first study year by math teachers)
Michael Møller Bech, Morten Lykkegaard Christensen, Lars Diekhöner, Christian Frier, Olav Geil, Erik Lund, Peter Nielsen, Thomas Garm Pedersen, Bo Rosbjerg, “Applications of mathematics in engineering and science, “ School of Engineering and Science, Aalborg University, 2012

Connection to external partners
Together with Henrik Sørensen, I am the Dept. of Energy Technology’s main interface to National Instruments’ North European Academic Officer. NI equipment is heavily used in many laboratory setups used for teaching activities in the whole department.

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

Nominated as teacher of the year at Energy Study Board a few times

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.

NA

8. Any other information or comments.

NA