

Teaching Portfolio, Jakob Alfred Møller-Jensen

1. Formal Educational Training

2017	Workshop on Peer-to-peer feedback, SDU.
2012	Pedagogic conference participation: Frontiers in Science Teaching, Aarhus University
2012	Course on Study Directorship, SDU
2011	Course on Study Directorship, Copenhagen Business School
2011	Workshop on digital examination, Nat-SDU
2011	Workshop on digital learning, SDU
2011	Course on the use of SmartBoards in University teaching
2010	Course on PhD supervision at SDU
2009	University teaching course at SDU (Universitetspædagogikum)

I have been associated with the Institute for Biochemistry and Molecular Biology (BMB) at SDU as PhD student (1998-2003), as assistant professor (2007-2010) and since 2010 as associate professor.

In 2010 I received the SDU Teaching Prize for Science.

2. Administrative tasks related to education

I have served in educational administration at the institute and faculty level. As chairman of the institute teaching committee and member of the faculty study board for four years (2010-2014) I have had the privilege of being involved in extensive reformation of our educations at Nat-SDU. During this time, we changed both the structure of our study programs, the way in which we teach, the way in which we measure the teaching load of individual colleagues, and the way in which we ensure the quality of our work.

I still serve as member of the department teaching committee and local responsible for local accreditation of our three education programs.

3. Experience with teaching, supervision and examination

2009-present	FF503: Chemistry, Biology and Molecular Biology, >250 students, 20 ECTS.
2007-2017	BMB510: Medical Microbiology, >100 students, 5 ECTS.
2008-2017	BMB827 Laboratory Course in Molecular Microbiology, 16 students, 10 ECTS
2012	Applied Proteomics (AAU). 30 ph.d. students, 2 ECTS
2010	Biotechnology training for high school teachers, 20 participants.
2009	BCM PhD course: From Bench to Bedside, 20 ph.d. students, 2 ECTS
2007-2008	BMB504: Fundamental Molecular Biology, >150 students, 5 ECTS
2008-2017	Nat501: Science Project, 5-10 students, 10 ECTS.
2009-2014	iGEM student project, 12 students.

Supervision:

Student projects are always designed to fit within the framework defined by my ongoing research activities for two reasons: first, I believe it is motivating for the student to become part of a research team and to provide a small piece to a larger puzzle, and secondly, by supervising student projects that fall within my main area of expertise and interest I ensure that my project teaching is research based and up to date. In order to further motivate I include the students in the planning of projects.

The fact that the majority of my students have decided to stay in the group to do additional projects - in my opinion - reflects positively on my ability to design exciting research projects and to create a pleasant working environment.

2017	Tine Thingholm, Assistant professor University teaching course
2016	Kim Ravnskjær, Assistant professor; University teaching course
2013	Karin Hjernø, Assistant professor; University teaching course
2011	Martin Overgaard, Assistant professor; University teaching course
2017-present	Sergi Torres Puig, postdoc
2015-2016	Mette Thorsing, postdoc
2016-2017	Arek Nawrocki, postdoc
2013-2016	Surabhi Khandige, postdoc
2012-2016	Mikkel Girke Jørgensen, postdoc
2012-2016	Anders Boysen, postdoc

2010-2011	Thomas Emil Andersen, postdoc
2016-present	Andreas Johansen, ph.d.*
2014-present	Sisse Mortensen, ph.d.*
2015-present	Thøger Jensen Krogh, ph.d.
2011-2014	Julius Fredens, ph.d.*
2010-2013	Surabhi Khandige, ph.d.
2010-2016	Michelle Madelung, ph.d.
2009-2012	Anders Olsen, ph.d.
2019	Mark Lyng, academic assistant
2015-2016	Anette Nielsen, academic assistant
2012-2013	Gorm Nielsen, academic assistant
2012-present	Tina Kronborg, academic assistant
*	ph.d. co-supervisor

Since 2008 main supervisor for 27 Master students (6 Novo Scholars) and more than 25 bachelor students.

Student assessment:

As teacher I have experience with a wide range of examination formats, both as summative final evaluation and as part of a formative evaluation (portfolio examination). The optimal evaluation tool depends entirely on the situation and will often be selected based on what the particular learning goals are - according to the theory of constructive course alignment by Biggs and Tang – and the available resources.

Evaluation forms include written reports, peer-to-peer assessment, written examination, oral examination based on written report, student project presentation, and E-tests.

Since 2008 I have been included on the Censor list for Biology and served as both external and internal examiner on several courses and projects. I usually examine in the order of 5-10 reports at other Danish universities annually.

4. Methods, materials and tools

Given the diversity of my teaching activities, I have no fixed teaching methodology or template. I try consciously to take the following aspects into account during teaching preparation and execution: student number, student experience and student diversity. I seek to activate students in the learning process as much as possible, for instance by including small-group discussion (“summemøder”) and the use of audience response systems (clickers) during lectures – and I use the same philosophy when designing exercises for tutorials. In my career as university teacher I have obtained extensive experience with a number of pedagogical tools as summarized in the below.

Audience response systems	Excellent tool to provide two-way feedback on the student learning process during lectures. Clicker questions should be carefully designed and thoroughly introduced. As teacher it is extremely important to act according to the outcome. In classes with less than 50 students I prefer small-group discussions as they allow an open question format.
Boards	I have really learned to appreciate the qualities of slow teaching. There is no better tool than boards to achieve this.
PowerPoint	Hard to avoid in modern teaching. Should always be used in combination with other techniques – and only when these alternatives do not suffice. Number of slides should be limited and carefully designed.
Peer-to-peer assessment	Peer-to-peer assessment is a powerful tool to further engage students who are already motivated. Cooperative learning techniques work if the student mass is fairly homogeneous. Requires that the teacher formulates an explicit framework for feedback, i.e. what characterizes a good and bad answer.
E-tests	On-line multiple-choice assignments are useful in order to facilitate student self-assessment. E-tests are also useful to test student preparation before laboratory practical exercises. Non-laborious once high-quality questions have been formulated. As for clicker questions it is important to formulate questions such that the incorrect answer possibilities sound somewhat plausible.
Project-based learning	This format is highly motivating for students in that they get to immerse themselves in a topic of their own choice. Rather labor-intensive for the teacher – but well worth the effort.

I always alternate between different didactic tools during a lecture. The shift from PowerPoint presentation to use of blackboard or illustrative physical items (DNA topology and supercoiling, for example, can be brilliantly illustrated by rubber tubing connected into a loop) and back provides small breaks, which also serve to some extent in re-synchronizing the minds of students that may have lost track along the way. A great advantage of the blackboard is that key principles can be listed initially and subsequently referred to repeatedly, thereby providing a narrative scaffold for the lecture.

In 2009 I pioneered the use of audience response systems (clickers) during lectures at SDU. In the following years, I introduced the use of clickers to several colleagues during seminars and workshops. In my opinion clickers represent one of the best means of engaging students actively in a large auditorium with 300+ students. Today this tool is widely used and highly appreciated by the students. In 2012 I supervised a Masters project by Nadia R. D. Kristensen entitled “Brug af Audience Response Systems til øget læringsudbytte af forelæsninger”. In this project we used surveys and interviews to evaluate the effectiveness of clickers to increase learning outcomes during lectures in large classes.

With increasing experience and confidence I have become more receptive to student reactions during my teaching. I am still working on improving my ability to 'play by ear', i.e. to leave my prepared script for the lecture and react to the students in an impromptu manner. When it comes to supervision of individual students and co-workers, I have matured much in recent years. I have become much better at expressing my expectations clearly. I believe that in order to perform optimally one should feel supported and challenged at the same time. Examples of this could be asking students to draft their own project descriptions, to present their individual project as well as relevant research articles during regular group meetings, or to take part in the daily supervision of less experienced group members.

During student supervision I always use whiteboards to capture essential points and to structure the conversation. Similarly, during group meetings, I encourage students to present their projects by use of drawings only as this slow format facilitates interaction within the group. So, while I am a great proponent of digital learning platforms, I also appreciate the qualities of 'old-fashioned' analogous teaching methods.

5 Educational Development

As Head of Department and former member of the faculty study board I have actively participated in development of our three study programs.

I strongly believe that innovative thinking should be part of our regular curriculum. We need to teach our students to apply their knowledge in a creative and forward-oriented manner – and there is room for improvement at Nat-SDU in this regard. Through my involvement in the establishment of a local spinout initiative (GlyProVac) I have gained first-hand knowledge of the process leading from initial scientific discovery to a viable business model – a truly eye-opening experience.

Ideally science innovation should be included in all courses – at least at the Master's and PhD level. We need to teach our students to use acquired knowledge in an innovative way, and there are many ways of realizing that ambition. Examples could be inviting guest lecturers from private industry or evaluating a course by asking the students to prepare a grant proposal. Through this exercise the students will learn how to use the knowledge obtained by critically reading the literature to propose new research projects, taking relevant aspects of project management into consideration.