

MASTER IN PROBLEM BASED LEARNING IN ENGINEERING AND SCIENCE

2-YEAR PART-TIME ONLINE PROGRAMME



United Nations
Educational, Scientific and
Cultural Organization



AALBORG UNIVERSITY

Aalborg Centre for Problem Based Learning
in Engineering Science and Sustainability
under the auspices of UNESCO

A NEW AND INNOVATIVE FORM OF INTERACTIVE LEARNING

Problem Based Learning (PBL) is widely recognised as a successful approach to teaching and learning in practice oriented areas of academic study, such as engineering and medicine. Aalborg University (AAU) is one of the leading institutions in this field, with a history of more than 40 years of applying PBL. The Master in Problem Based Learning programme (MPBL), which is offered by Aalborg Centre for Problem Based Learning in Engineering Science and Sustainability under the auspices of UNESCO, was developed in order to share the experiences gained with interested institutions and teachers. The combination of PBL and on-line learning offers a new and flexible learning space, where advanced learning and teaching tools, including e-learning and video conferencing tools are used intensively to support a new and innovative form of interactive learning.

AIM

The overall aim of this Master's programme is to support participants in achieving competences that will allow them to act as change agents in the introduction of problem based and project organised learning at the level of a single course as well as at the level of a curriculum or an institution within the context of engineering and science education, addressing diverse groups of students.

In order to achieve this aim, the MPBL programme has been designed according to the PBL principles, i.e. it is problem based and project organised. Participants work in teams with educational experiments designed to solve real-life educational problems, preferably located within their own teaching practice.



TARGET GROUP

The MPBL programme is an international, fully online and highly interactive academic staff development programme for faculty staff at institutions which want to change to PBL – or for faculty staff who are interested in learning more about PBL.

DEGREE DESIGNATION

The completed Master's education entitles participants to the title:

- Master i problembaseret læring i ingeniør- og naturvidenskab (Danish)
- Master in Problem Based Learning in Engineering and Science (English)

DURATION AND CREDITS

The MPBL programme is a research based continuing education, equivalent to a one-year full-time study (60 ECTS credits) and offered as a part-time study lasting two years. It is divided into four semesters and credited with 15 ECTS per semester. The first three semesters consist of one project of 5 ECTS and 2 courses of 5 ECTS each while the last semester is the Master's thesis (15 ECTS).



PROGRAMME CONTENT



The MPBL programme encompasses two types of study activities: the project work, which is the main study activity of a semester and the courses, which are designed to support the project work.

MASTER IN PROBLEM BASED LEARNING IN ENGINEERING AND SCIENCE (MPBL)		
SEMESTER	PROJECT	COURSES
Semester 1: Development of teaching competences (15 ECTS)	Teaching portfolio	<ul style="list-style-type: none"> • Teaching and learning theories • Collaborative learning skills and scientific writing
Semester 2: PBL models and principles (15 ECTS)	Design and planning of a PBL module	<ul style="list-style-type: none"> • PBL models and curriculum development • Facilitation skills and teaching methods for active learning
Semester 3: Management of change and evaluation (15 ECTS)	Implementation of change	<ul style="list-style-type: none"> • Management of change to PBL • Research methods for educational evaluation
Semester 4: Master's thesis (15 ECTS)	Master's thesis	



TEACHING FORMAT

The programme is based on a combination of academic problem-oriented interdisciplinary approaches to teaching and learning. Teaching formats include but may not be limited to the following methods:

- On-line lectures
- Web mediated project work
- Online workshops
- Self-study and readings
- Web mediated group discussions
- Facilitation and feedback
- Self- and group reflection
- Individual portfolio work

ADMISSION

Admission to the MPBL programme presupposes a relevant higher education, at least at bachelor level, and at least two years of relevant, professional experience in teaching or similar occupation following completion of the qualifying exam.

The official minimum English language requirement for Danish students is B level.

The official English language requirements for international students applying to Aalborg University are:

- IELTS (academic test):** 6.5 www.ielts.org or
- TOEFL (paper-based):* 550 www.ets.org/toefl or
- TOEFL (computer-based):* 230 www.ets.org/toefl or
- TOEFL (internet-based):* 80 www.ets.org/toefl or
- Cambridge ESOL:* C1 www.cambridgeenglish.org

*The test has to be sent directly from the test center.

** Original or verified copy of original.

Aalborg University may allow admission to applicants who do not fulfil the admission requirements but who are considered to have the necessary prerequisites to accomplish the study programme. The requirement of relevant professional experience cannot be exempted.



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I qualified with a PhD in the natural sciences, after which I pursued an academic career, without any training in didactics, as it was never a requirement. Yet, I soon realised the complex nature of teaching and learning as South Africa underwent a major restructuring of its Higher Education Institutions with a move towards learner-centred education practices. At that stage, staff were offered an opportunity to register for the Master in Problem Based Learning, offered by Aalborg University.

The degree was a life-changing experience and put me on a developmental path which boosted my career, also benefiting those I teach. The degree itself turned me into a learner for life, and equipped me with the necessary competencies and skills to instil the same values in those I teach.

Today, as a senior academic, I am aware of the variety of qualifications on offer, but I will always be grateful for having chosen Aalborg, as it has not only equipped me with a degree, but so also with values and understanding. This is one big thumbs-up for a qualification that taught me how to love my career as an academic!

Prof. Frederick J. Veldman

Head of Discipline, Dietetics and Human Nutrition, School of Agricultural, Earth and Environmental Sciences, University of KwaZulu-Natal, South Africa



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The Hospitality industry and education have always been my passion. After my National Diploma and degree in Hospitality Management, I wanted to focus more on education (teaching and learning). I then completed a Post School Education degree and had decided to venture into the academic world at higher education level after teaching at a High School for five years.

Developing the soft skills of students and preparing them for the world of work in a learner centred approach became my interest and when my University of Technology offered staff the opportunity to do the Master in Problem Based Learning (MPBL), I grabbed it with both hands! I was convinced that I would become an expert 'teacher' - which the course most definitely offered, but more appropriately, the MPBL started moulding me into a scholar. It opened my eyes to the wonderful world of Problem based Learning - where students become the captain of their own learning, where they are guided into thinking on their feet, better communication and improved group work, to name but a few qualities. These were the attributes I wanted my own students to master - the same attributes our industry expects from the calibre students coming from our Hotel School.

My idea of 'teacher' was transformed into the more rewarding role of facilitator of knowledge. The MPBL also aligned perfectly with my University (and South Africa's) vision towards learner centred and entrepreneurial approaches towards education. The MPBL changed my life, my way of thinking and my approach towards education - I could not have been more privileged to have completed it!

Grethé Muller

Lecturer: Hospitality Management, Hotel School, Central University of Technology, Free State, Bloemfontein, South Africa



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FURTHER INFORMATION

For further information about application procedure, payment and admission requirements, please contact:

AALBORG UNIVERSITY

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For further information about the academic content of the programme,
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further information?



MPBL.AAU.DK



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