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## Teaching Portfolio

### 1. Pedagogical philosophy:

I have always enjoyed teaching, already at high school I was often tutor for my student mates, later during studies at DTU I was assistant teacher until now more professional at the university. Besides I have in my time in industry made educational programs for people in the entire organization from production people to top management. Teaching is exciting and challenging and very different dependent on the topic, the target audience and the purpose.

My philosophy is that learning has to be fun, motivating, varied with the right mix of theory and practice. One of the reasons why I had 6 years in industry was to get practical experience as a teacher. This may be important in any topic, but especially within engineering I found it unsatisfactory and to some extent untrustworthy to teach the engineers of the future without never tried to work as an engineer.

In teaching it is important to have the target audience in mind and to be aware of their professional level, their knowledge, competence, motivation and of course the purpose with the teaching. You have to apply different pedagogical principles and methods if you are teaching a masters student, a company manager, a production worker, but no matter who you teach the connection to the students is important. Personally I try to involve the students as much as possible in the learning process.

The good learning process is where the students are challenged e.g. by applying the theories connected to projects or exercises. At the university the problem based learning combined with reflection is exciting and challenging for both students and teachers. In a situation where new principles, working methods or facts have to be explained then lectures with exercise might be the right method.

To apply games or simulation models can be very useful in many situations. A game may be a production game e.g. by applying fictive and simple Lego products, it may be role games in an organisation to try different situations or solutions. The good thing about games is that people are removed from their daily routines and play in a controlled and safe environment, where experience can be discussed and afterwards connected to the real world or situation.

Learning takes place through reflection and in contact with other people. Pupils are different, as well are the learning principles and methods, it is therefore often a good idea to combine and vary the different methods and tools. At the university the students are responsible for their own learning, where we as teachers have to support the frames and give the opportunities. To work problem based and in teams are important in the modern society. As a graduate you may be an expert, who has to be able to perform in a team. I am among other courses teaching the course "Experts in Teams" which I find very interesting from a professional as well as a human point of view.

### 2. Teaching experience:

Below a list of courses on Master and Bachelor level. At Phd level I have been teaching research methodology and scientific writing.

Course  
Institution  
Course name  
ECTS  
year

DTU  
Styrkelære 1 og 2 (hjælpelærer)

1983-85  
8415

DTU  
CAD/CAM  
6  
1989-93  
8006  
DTU  
Computer Integreret Proces og Produktionsteknologi  
6  
1991-93

SUNY<sup>1</sup>  
Computer Integreret Produktion

1990-91

SUNY  
Computer simulation

1990-91

DTU  
CIM lab demo

1986-94

DTU  
CSP – Computer Simulering af Produktionssystemer  
6

1993-98  
CCC-1P  
SDU  
Computer Integreret Produktion  
5  
1998

SDU  
CSP – Computer Simulering af Produktionssystemer  
5

1998-2001  
DIV 1P  
SDU  
Den Integrerede Virksomhed  
5

1999-2001  
IFT  
SDU  
CIM – Computer Integrated Manufacturing  
5

1999-2002  
PRT  
SDU  
Produktionsteknik  
5

2004-2005  
PRM  
SDU  
Production Management  
5

2006-2009  
OPM1  
SDU  
Operations Management 1  
5

2010-2019  
OPM2  
SDU

Operations Management 2  
5  
2010-2018  
ITB/STM  
SDU  
Innovation of Technology and Business  
10  
2012  
EXT  
SDU  
Experts in Teams  
10  
2010-2012  
SPRO4  
SDU  
Semester project  
10  
2011-2019  
GLP  
SDU  
Glocalized Production  
5  
2013-2018

<sup>1</sup> SUNY = State University of New York

### **Supervision of projects**

At DTU in the period 1990 – 1998 I have supervised app. 15 masters projects. At Linak I had the overall responsibility for contact to universities and supervised in the period 1998-2004 app. 20 final projects from different Danish institutions. At SDU in the period 2004-2015 I have supervised app. 50 students in final projects. From the list below the students since 2009 is documented.

### **Bachelor projects/year**

#### **Student**

#### **Subject**

Juni 2010

Rasmus Lyck Petersen

Optimization of switch-over in the SMT area

Juni 2011

Ómar Grétarsson

Undersøge muligheden af metan produktion og udnyttelse i Sønderborg

Rúnar Smárason

Undersøge muligheden af metan produktion og udnyttelse i Sønderborg

Einar Árni Sigurdsson

Autotrailer alarm

Jimmi Andersen

Digitalisering af DBU`s system

Juni 2012

Zaid Bahaa Bader Al.Azawi

Innovative and sustainable youth accommodations

Lasse Justesen

Change management – LEAN implementation and culture change

Juni 2013

Anette V. Bernbom

Kvalitetsoptimering ved hjælp af fejlrettelsesdatabase

Mathias Bek, Tim Bøgh Morthorst

Protection of Boats – Innovative solutions

Juni 2014

Finn Döhring

Productivity and Lean in a German SME

Henrik Nicolaisen

Lean transformation in service environment

Julius Born

Sönke Wolter

Optimization of Production Facilities and Business model at Wenckstern GmbH

Tony Skov Mathiesen

Quick Response Manufacturing

June 2015

Ernestas Galgatavicius

Flexible Assembly Cells

Januar 2016

Frederik Klakk Jeppesen

INDUSTRY 4.0 MANUFACTURING at Danfoss Gråsten

June 2016

Nikolaj Sørensen & Annemette Kjær

Collaborative resource sharing in small and medium-sized enterprises

Marcus Alexander Byrgesen

Operations management project at Delfi Electronics

June 2017

André Agertoft Condamine

Computer simulation and Virtual reality

Mark Kronborg

Simulation with Tecnomatix

Tinus B. Byrgesen and Mark J.S. Yeoman

Resource sharing platform for Danish SMEs

June 2018

Olga Kunanets and Tommy Bager

Lean Manufacturing And Management – Experience And Impact

Sigurd Vive Bergstrøm

Simulation and research project, Invector

Ibrahim Mohammad and Abdelaziz O. Abdallah

Diagnostics Tool To Optimize Manufacturing Companies

Diplom afgangprojekter

Jan 2009

Jakob Kentzer

LEAN på LINAK med focus på kvalitet og flow

Muniru Mohamed

Implement lean at Danfoss Nessie

Sune Solberg Hjorth

Reducering af VIA gennem LEAN og Activity Based Costing

Anja Thingholm Jørgensen

Fra LEAN til CLEAN – Bæredygtig produktion

Silvia Margot Sørensen

Fra LEAN til CLEAN – Bæredygtig produktion

Jan 2011

Thomas Mark Jensen

Tilbehørsposer til frekvensomformer – Kvalitetssikring af ilægningsproces

Jesper Brumvig

Global produktion og logistik setup for Danfoss Solar Inverters

Brian Slotved

Løbende kvalitets kontrol for motorbeskyttelses moduler

Lasse Fangel Nielsen

Innovationskulturen på Søby Værft AS

June 2011

Jetta Højgaard

Sikring af forsyningsvejene

January 2018

Patrick Jepsen (Mekatronik stud)

Automation of rearing insects

Sveinn Daði Einarsson (Mekatronik stud)

Implementation Of Reconfigurable

Manufacturing System Test-Lab

Including Collaborative Robot

Master projects

June 2009

Ying Sun

Green and Innovative Container Flooring Manufacturing

June 2010

Yousef Iskandarani

2D controller using DEAP technology

June 2011

Marcin Szarek

Relationship between energy optimization and lean philosophy

Bin Zhang

Mearuring and Monitoring Physiological Parameters at Human Body: Motion Data Analysis

Yue Wang

Sensor Networks in Biomechatronics – Hexapod Robot

Nicolaas T. Hulskamp

Generic framework for an emulator testbed  
June 2012  
Audrius Klimas

Intelligent electric vehicle battery recycling

Kristian Rasmus Petersen  
Decentralized Supply Chains at LEGO A/S

Ying Wang

Manufacturing Concepts of the Future based on Reconfigurable Manufacturing System

Karamtej Singh

Computer simulation of logistics systems

Chousein Molla

DEAP based sensors for use on the EMICAB

Mikkel Børlum Petersen

Dynamic Tactile Sensing: Identification of Slip and Surface Textures  
June 2013  
Marianna Chavez Cobo  
Glocalized Production

Poonam Chapade  
Complexity Management by cases from Danfoss  
June 2014

Elisabete Ezeiza Iburguren  
An Integrated Maintenance Management System Model for Offshore Wind Farms – a Management towards Complexity

Mohammad Shahabeddini Parizi  
Zaid Al Azawi  
Automation Solution in SMEs

Xiaojing Su  
Low Carbon Emission Solutions and Policies in Sønderborg and How It Can Lead to New Green Business Opportunity in China  
June 2015  
Ali Ahmad Malik  
Factories and Production System of the Future

Niels Albert van Dulmen  
Identification of potential for implementation of Modular Architecture – Danfoss case

Pu Wang  
Supply Chain and New Business Models

Raluca Nemes  
Qi Chen

Innovation Ecosystems- Exploring SME collaborations

Thor Lassen  
Financing- and Collaboration Models in SME Collaborations  
June 2016

Silvio Juliano  
Technology morphology classification of manufacturing processes for automation solutions

Stefan Otzen  
Purification and Control Systems in Hospitals  
June 2017  
Gul Abeer Khan

## IMPLEMENTATION OF VIRTUAL & AUGMENTED REALITY IN MANUFACTURING INDUSTRY

Niklas Franke

The impact and prospects of additive manufacturing in the metal industry

Shiyu Peng

The 4<sup>th</sup> industrial revolution in a Sino-Danish context

June 2018

Christian Petersson Nielsen

Digital Twins in Smart Factories

Julia Bertels

Flexible Lean Automation

Julius Ferdinand Andreas Born

Virtual twin in design of lean automation cells

Mirco Gwozdz

How easy is the integration of a collaborative robot in SMEs with High Mix Low Volume – HMLV Production?

Saad Ahmad

Operator 4.0

Xuan Lyu (Melody)

Reducing Procurement Complexity Research -through digitalization

June 2019

Malik Shahzaib Saleem

Optimization of Packaging line with Tecnomatix Plant Simulation and Digital Twin

Yara Álvarez Torres

Implementing Process Simulate in production assembly cells at Danfoss

Robin Schreiber

From Prototype to Commercialization - How can startups shape the transition?

Robin Sandomeer

Development of a Picking and Kitting System for Automated Manufacturing at Danfoss Drives

Usama Bajwa

Development of an Event-Based Robotic Simulation for a workstation

Marcus Alexander Byrgesen

How may simulation tools help SME's carry out optimization- and automation projects

Vysakh Raj

Optimization of simulation model and automatic data integration using Tecnomatix plant simulation and Teamcenter

### PhD projects

Below a list of PhD projects supervised. At the projects before 1999 operated as assistant supervisor. At SDU after 2004 full responsible as supervisor.

### PhD projects/ graduate year

#### Student

#### Subject

1996

Hans Jørgen Lynggaard

Models and Methods for Design and Implementation of Computer Based Control and Monitoring Systems for Production Cells

1999

Gilad Langer

HoMucs A Methodology and Architecture for Holonic Multi-Cell Control Systems

1999

Michael Holm Larsen  
CALs – Continuous Acquisition and Life Cycle Support  
2002  
Kim Siggaard  
Development and implementation of Shop Floor Control systems  
Jul 2011  
Fei Yu  
Non – invasive Sensors in Medical Applications – Measuring and Monitoring of Fatigue  
Oct 2011  
Alin Drimus  
Sensory Robot Grippers  
Feb 2012  
Ruslan Lazarev (Co supervisor)  
Monitoring and Control of Fine Abrasive Polishing - Robot Assisted Polishing  
Jan 2014  
Ronen Hadar  
Glocalized Production – A Holistic Approach for Future Production at the LEGO Group  
Feb 2016  
Kristian Petersen (Co supervisor)  
Maintenance of Offshore Wind turbines  
Feb 2017  
Agnieszka Radziwon  
The Smart Factory  
Nov 2017  
Henrik Blichfeldt  
Adaptable Technology – focus at SMEs  
April 2018  
Ole Wennerberg Nielsen (Co supervisor)  
Hyper flexible automation  
January 2020  
David Grube Hansen  
Automation of High-Mix Low-Volume production by SMEs.  
March 2020  
Ali Ahmad Malik  
Flexible Lean Automation – Human robot Teams driven by Digital Twins

I have been project and intern ship responsible at MCI, where the task is to inform and supervise students in the choice of project and finding companies for internship.

I have been part of the censor corps and been censor at projects at most of the Danish engineering educations.

### 3. Pedagogical education:

Completed the course **Applied pedagogy** in October 1997 at "Pædagogiske serviceenhed, Handelshøjskolen i København."

Courses in pedagogy

Kursus i **Kvalitet og Samarbejde** incl. struktureret problemløsning, kommunikation intern/ekstern PM konsulentfirma på LINAK 1999

Indstillingsmodellen **Kvalitet i livet** LINAK 1999 ved Meng & Company.

Kursus i **Værdibaseret ledelse** incl. strategiudvikling, kundefokus, den gode cirkel osv. LINAK august 2000 ved Meng & Co.

Kursus i **Personlig udvikling** incl. målstyring, coaching, helhedsforståelse osv. ved Mercuri Urval 2000.

Kursus i **Projektstyring og -ledelse** ved Mercuri Urval incl. planlægning, organisering, DISC/Belbin, risikostyring, konflikthåndtering i 2001.

Kursus i **Lederudvikling**incl. NLP, DISC modellen, kommunikation, konflikthåndtering osv. ved Mercuri Urval 2002

Kursus i **Mødeteknik og -ledelse** ved Syddansk Universitet marts 2007



Kursus **Personlig Planlægning** incl. prioritering, stress faktorer, planlægningens ABC, assertiv kommunikation, handlingsplan September 2007 på SDU

Kursus **Medarbejderudviklingssamtaler** incl. spørgeteknik, kommunikation, uddannelsesplanlægning, November 2007 på SDU

**Institutederkursus** 2008-2009 ved Danske Universiteter og Syddansk Universitet incl. Strategisk ledelse, undervisnings-/forskningsevaluering, undervisningsledelse, MUS, JTI, coaching osv.

Pedagogical development projects

Have been involved in development of study programs for bachelor as well as master studies at the Mads Clausen Institute. This has been for the studies "Økonomi og Teknologi", "Produktionsingeniører", Management and Technology, Mechatronics and Innovation and Business.

Have been involved in the development and implementation of the DSMI- "Den Syddanske Model for ingeniørstuderende på SDU" particularly when it comes to the internship model.

Conferences

**Logistik seminar** incl. ordrestyring, leverandørstyring, planlægning, styringskoncepter, marts 1999 på LINAK ved P.E. Christiansen, CBS

**LeanSigma Transformation workshop** November 2001, TBM Institute

**Piezo Actuators**/Introductory Course april 2005 på Cedrat Technologies.

**LEAN Management – Kvanteforspring i produktiviteten for få midler** ved Teknologisk Institut januar 2006

Contribution to pedagogical development planning conferences etc.

ATV Semapp, been part of the board and have arranged professional workshops and conferences for Danish Industry in the period 1996-2004

Teknik og Data, part of the work group to arrange annual conferences for Danish Industry in the period 1994-1998

I the regime of Mekatronisk Selskab made conferences and work shops at DTU og SDU

Pedagogical development project

At DTU developed the CIM laboratory for teaching in automated production.

At Linak and later at MCI developed and applied production games for teaching innovation, logistics, manufacturing principles, Lean, quality management etc.

Additional.

Has students at the Wall of Fame for best project 2010.

Has been awarded the Best teacher of the Year at SDU/MCI Sønderborg 2016