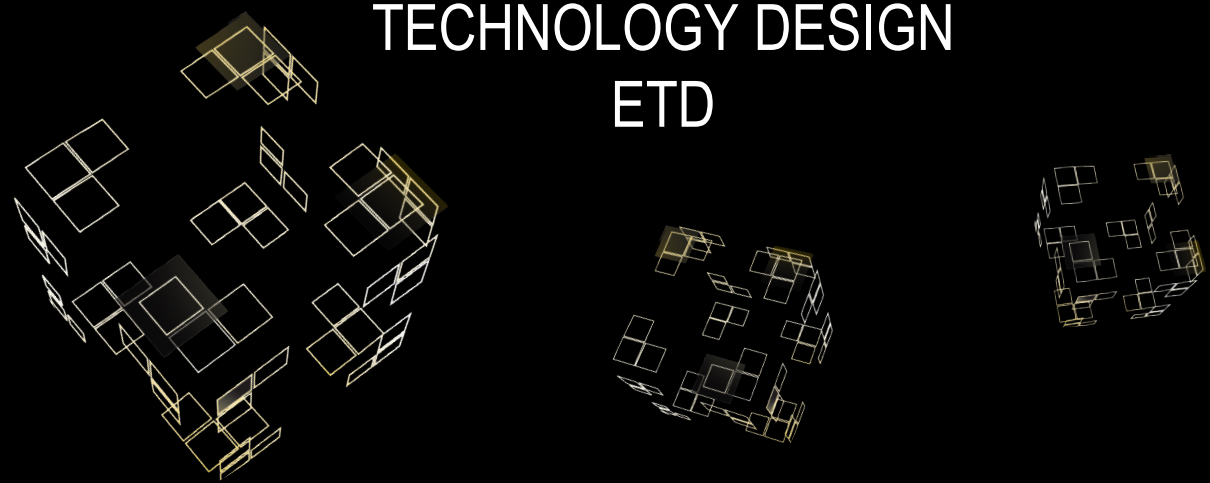


# MASTER IDE

INTRODUCING EMERGING  
TECHNOLOGY DESIGN  
ETD



prof. dr. ir. E. van der Heide

UNIVERSITY  
OF TWENTE.

# GENERAL INFORMATION

- 3 Years Bachelor IDE
- 2 Years Master IDE
  
- 350 bachelor / 200 master students



# MASTER IDE

## BACHELOR

- Skills and knowledge
- Scientific
- Broad spectrum
- Clearly defined

## MASTER

- Knowledge and research
- Scientific depth
- Specialized field
- Many options

# HOW TO CHOOSE YOUR INDIVIDUAL STUDY PROGRAMME?



**MOPD**  
DR. IR. D. LUTTERS  
(ERIC)



**ETD**  
PROF. DR. IR. E. VAN DER HEIDE  
(EMILE)



**HTR**  
DR. IR. W. EGGINK (WOUTER)

## Tracks

Management of Product Development (MOPD)

Emerging Technology Design (ETD)

Human Technology Relations (HTR)

50% MoPD / 25% HTR / 25% ETD

# MASTER IDE

DESIGN

HUMAN FACTORS

ENGINEERING

ONE DIPLOMA FOR ALL TRACKS

# **EMERGING TECHNOLOGY DESIGN**

MASTERTRACK INDUSTRIAL DESIGN ENGINEERING

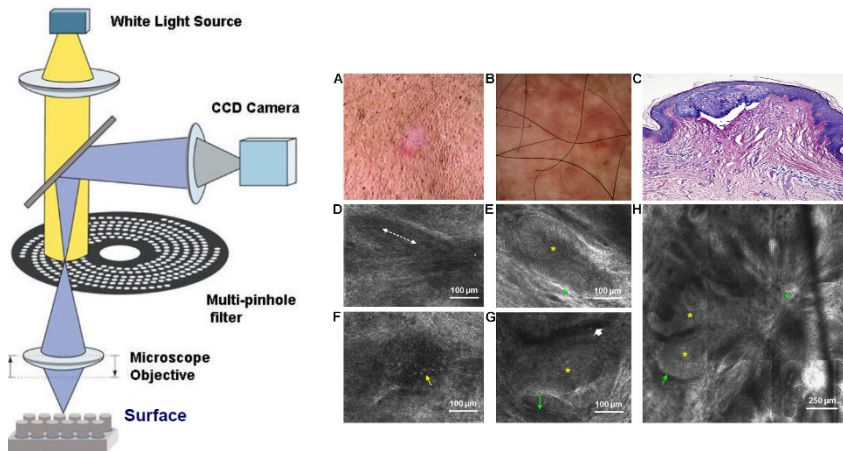
---

## **“DESIGN ENGINEERING SOLUTIONS FROM EMERGING TECHNOLOGY”**

Keywords: design, research, engineering technology

# EMERGING TECHNOLOGY DESIGN CONTEXT

•[10.2217/mmt-2018-0001](https://doi.org/10.2217/mmt-2018-0001)



[doi.org/10.3892/ol.2016.4354](https://doi.org/10.3892/ol.2016.4354)



new technology

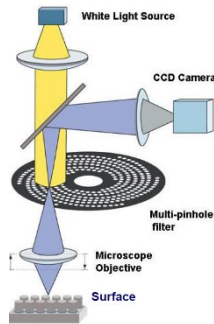


made available for society

# EMERGING TECHNOLOGY DESIGN

## CONTEXT

---



You like to:

[dermnetnz.org](http://dermnetnz.org)

- understand new technologies → make them available for society
- convert recently published theories/technologies to new products or implement in existing products
- integrate technology and design
- In short: be the bridge between research environments and market/industry



# MASTER IDE

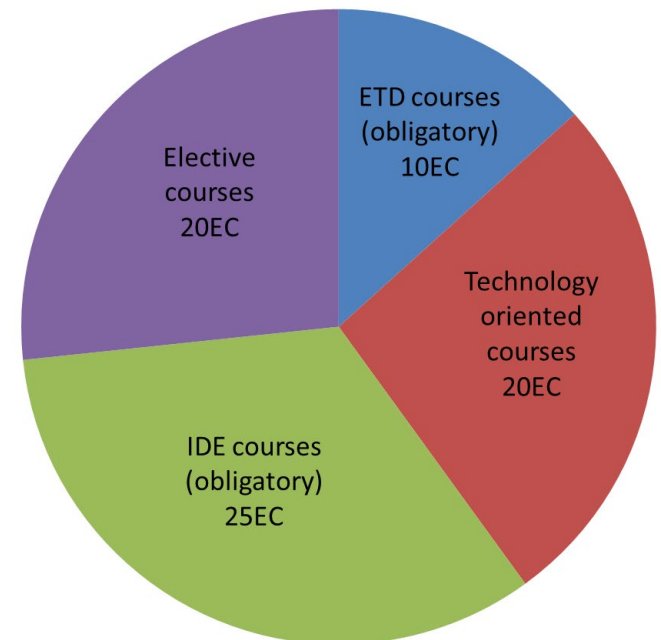
Course 1 5EC Course 2 5EC Course 3 5EC	Course 4 5EC Course 5 5EC Course 6 5EC	Course 7 5EC Course 8 5EC Course 9 5EC	Course 10 5EC Course 11 5EC Course 12 5EC
Course 13 5EC Course 14 5EC Course 15 5EC	MSc. Assignment 45 EC (INTERNAL OR EXTERNAL)		

# INDIVIDUAL STUDY PROGRAMME ETD

---

## Courses (75 EC, equals 5 quarters)

- ETD courses (mandatory) (10 EC)
- Technology oriented courses (20 EC)
- IDE courses (25 EC)
- Elective courses (20 EC)



## Master Assignment (45 EC, or 3 quarters)

# ISP

## PRE-DEFINED PROGRAMMES

- Enroll as IDE ETD
- Enroll to canvas site: IDE Master track Emerging Technology Design
- Latest version of the ISP can be found at the canvas site

UNIVERSITY OF TWENTE  
EMERGING TECHNOLOGY DESIGN

Individual Study Programme  
ETD

First name: \_\_\_\_\_  
Name: \_\_\_\_\_  
Title: \_\_\_\_\_

Enter your user number (12345678)  
Enter your user name  
Enter your ID card (0000000000)

Problem(s)  
There are no problem(s) in the ISP  
There are no problem(s) in the ISP  
There are no problem(s) in the ISP  
There are no problem(s) in the ISP

	First/1 <sup>st</sup> quartile		Second quartile		Third quartile		Fourth quartile	
	Course	EC	Course	EC	Course	EC	Course	EC
ETD general	21000070 Master assignment - Emerging Technology Design 4E							
	21000060 Selection of Introduction 5		21000070 Surface Engineering for Cars and Trains 5					
AMM	21000060 Plastics and Polymer Engineering 5		21000070 Composites 5		21000064 Radiation Science & Engineering 5			
			21000070 Design, Production & Materials 5		21000064 Energy and Processing of Thermoplastics 5			
MPC	21000070 Integrated Design of Biomedical Products 5		21000060 Biomechanics 5		21000064 Human Movement Control 5		21000064 Topics in Human Anatomy & Sports Physiology 5	
	21000060 Dynamics & Control 5		21000060 Technology for Health 5				21000064 Biomechanics 5	
			21000060 Robotics for Medical Applications 5					
Product	21000067 Design of Surface Co. 5				21000064 Durability of Consumer Products 5		21000064 Design of Surfaces for Comfort and Touch 5	
					21000064 Quality of Consumer Products 5			
MEAN	21000060 Systems Engineering 5		21000064 Basic Vehicle System Design 5				21000064 Smart Embedded Systems Integration Project 5	
	21000060 User-Centred Design of New Media 5						21000067 Designing Interactive Experiences 5	
MEAC	21000060 Engineering Acoustics 5				21000064 Design Principles for Precision Mechanisms 2		21000064 Dynamics 2 4,5	
	21000060 Dynamics & Control 5				21000064 Evaluation of Mechanical Methods 5,5		21000067 Systemic Approach 1 4	
					21000064 Experimental Methods 5			
STPD	21000060 Emerging Product Development 5		21000064 Product Life Cycle 5		21000064 Intellectual Property in Product Development 5		21000064 Empirical Methods for Designers 5	
							21000064 Learn To Sign / Green Book 5	
ETD general	21000064 Maintenance Engineering & Management 5				21000064 Design for Maintenance Operations 5		21000064 Reliability 5	
	21000064 3D Printing, processes & use 5						21000064 Industrialisation & Bus. in Construction 7,5	
	21000064 Cognitive Science 5		21000064 Cognitive Science 5		21000064 Cognitive Science 5		21000064 3d-Print 5	
Total ETD courses								
Engineering Practice (non-ETD)	21000060 Emerging Product Development 5		21000064 Product Life Cycle 5		21000064 Product Life Cycle Management 5		21000067 Virtual Reality 5	
	21000060 Prototyping Design & Management 1 5		21000060 Prototyping Design & Management 2 5		21000064 Intellectual Property in Product Development 5		21000064 Empirical Methods for Designers 5	
			21000064 Integrated Life Cycle Management for Product Variety & Complex ... 5		21000064 Advanced 3D Modelling 5		21000064 Learn To Sign / Green Book 5	
			21000064 Safety by Design 5				21000064 Data-Driven Product Development Project 5	
							21000064 Embedded Introduction 5	
Technology Initiatives	21000064 Brand Management 5		21000064 Design and Behaviour Change 5		21000064 Scenario Based Product Design 5		21000064 Embedded Introduction 5	
	21000064 Create the Future 10		21000064 Multidisciplinary Design 5		21000067 Design Literacies 5		21000064 Design & Innovation 5	
	21000064 Science and Technology studies 5		21000067 English Language of Products 5					
Total MPC/STP courses								
Other courses in ISP	General course		General course		Faculty/University		Credits	
Total external courses								
Total Individual Study Programme								

# ONE TRACK – SIX PROGRAMMES

## CURRENT FOCUS

---

- Advanced materials engineering
- Biomedical product design
- Product and Surfaces
- Smart Environments & Virtual Reality
- Structural Dynamics, Acoustics & Control
- Sustainable Technology for Product Development

# ONE TRACK – SIX PROGRAMMES

## CONTACT PERSONS

---



Dr. Bor  
AME



Ir. Hekman  
BPD



Dr. Matthews  
ProSurf



Dr Bonnema  
SE&VR



Prof. Rosic  
'SDA&C'



Ir. Toxopeus  
STfPD

# ADVANCED MATERIALS ENGINEERING

THE DESIGN AND DEVELOPMENT OF AN INNOVATIVE DISCONTINUOUS AND  
CONTINUOUS REINFORCED HYBRID COMPOSITE MATERIAL

---



Ackelien Hageman

How to develop a near-net-  
shape material leading to a  
better formable laminate sheet  
using quick and easy processing  
methods

# BIOMEDICAL PRODUCT DESIGN

## THE MORGAN, NEXT LEVEL ORGAN PERFUSION

Frank Timmerhuis



transport system for  
transplant organs that  
enables perfusion of  
organs

cooperation with  
Dutch transplant  
centres

perfusing the organ  
during transport  
conditions positively  
affects the quality of  
the organ

# PRODUCT AND SURFACES

## DESIGN AND FABRICATION OF A BIOMIMETIC LIFTING AID

---

Tjitte de Wolff / DDW 2017



The lifting aid anchors itself on rough surfaces and can resist great transverse forces - just like an octopus.



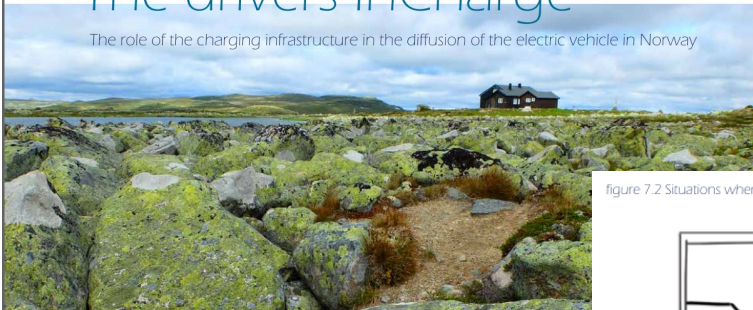
# SMART ENVIRONMENTS & VIRTUAL REALITY

## THE DRIVERS INCHARGE – THE ROLE OF CHARGING INFRASTRUCTURE IN THE DIFFUSION OF ELECTRIC VEHICLES IN NORWAY

Noortje Naeff

### The drivers InCharge

The role of the charging infrastructure in the diffusion of the electric vehicle in Norway



Noortje Naeff

UNIVERSITEIT TWENTE.

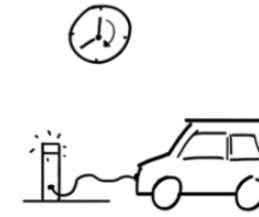
figure 7.2 Situations wherein drivers need information about the charging infrastructure



Planning a trip from A to B. When a journey exceeds the range, the *Norsk Elbilforening* advises to have at least a plan B.



Find the exact location of the charging facility; most chargers are quite anonymous.



Find out what facilities are nearby the charging points, so that waiting time can be enjoyed or spend useful (especially during fast charging).



During a trip: find a charger near to you. Many drivers find it convenient to charge their car, even though they can travel back home without charging.



A charging point is (temporary) out of order. This information could be crucial for drivers to rely on the infrastructure.



You cannot use the planned charging point, because it is in use, out of order et cetera.



A new charging facility is established. This information might be helpful for the driver to extend the electric car usage.

Bonus



Citizens considering to buy an electric vehicle, often explore the travel possibilities on for hand. Is the range of the electric car sufficient for me?

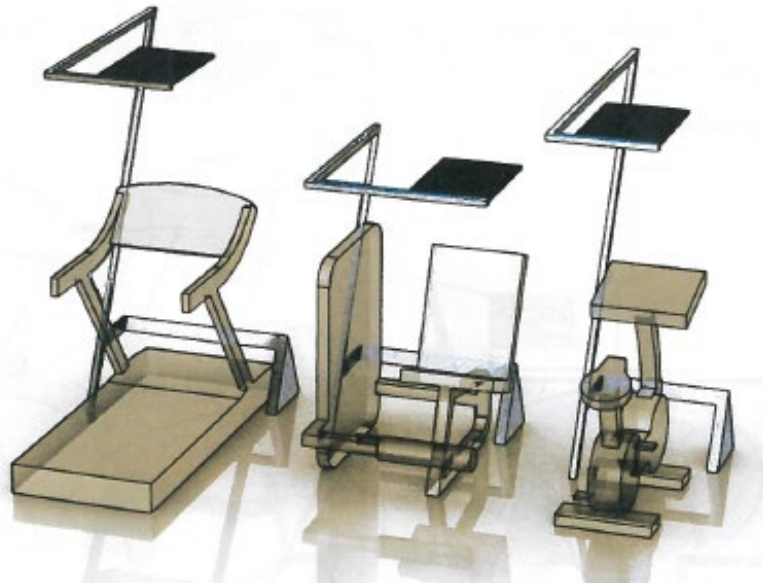
UNIVERSITEIT TWENTE.

# STRUCTURAL DYNAMICS, ACOUSTICS & CONTROL

A SOUND BEAM PRODUCT FOR BANG & OLUFSEN

---

Design and development of a product in which the sound panels are placed in a horizontal overhead position



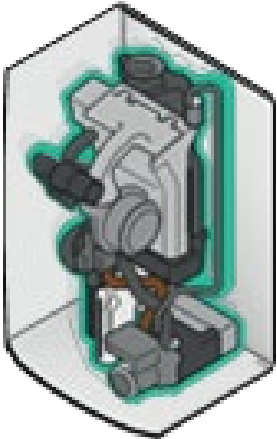
Marianne Bos



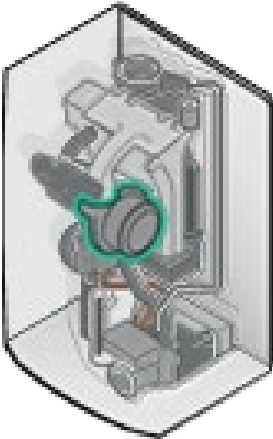
# SUSTAINABLE TECHNOLOGY FOR PRODUCT DEVELOPMENT

DEVELOPING A DEDICATED TOOL TO SUPPORT THE DEVELOPMENT OF DOMESTIC BOILERS FOR A CIRCULAR ECONOMY

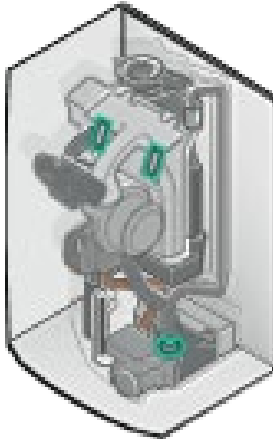
Niek van den Hout



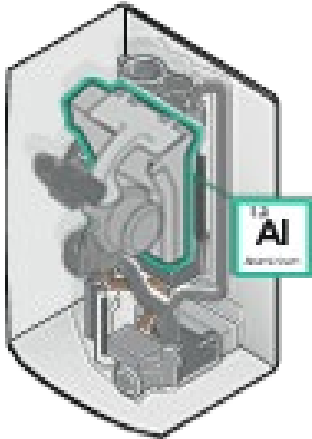
ARCHITECTURE



COMPONENT



CONNECTION



MATERIAL

# CONTACT DETAILS

---

For more information on

- ETD and
- specific aspects of your individual study programme

[e.vanderheide@utwente.nl](mailto:e.vanderheide@utwente.nl)

HR N112

prof. dr. ir. E. van der Heide

ETD Master Track Coordinator