

# 19<sup>th</sup> SUMMER SCHOOL ON ENGINEERING DESIGN RESEARCH

Week 1: June 12<sup>th</sup> – June 17<sup>th</sup>, 2017, Seminar- und Ferienhaus “Zur Talsperre”, Heyda  
(near Ilmenau), Germany **(Mon-Sat!)**

Week 2: July 16<sup>th</sup> – July 22<sup>nd</sup>, 2017, Magleås Kursuscenter, Birkerød  
(north of Copenhagen), Denmark **(Sun-Sat)**

**Deadline for application:** March 31<sup>st</sup>, 2017

**Latest notification of acceptance:** April 18<sup>th</sup>, 2017

## Aims of the Course

The aims of the Summer School on Engineering Design Research are to make PhD students who are working on topics related to Design Science better qualified and equipped for their research by (i) helping them select a theoretical foundation and develop a research approach, and (ii) encouraging discussion and collaboration.

The objectives are to provide the participants with:

- insight into existing design theories and models to enable the selection of a suitable theoretical foundation,
- an overview of design research methods to enable them to develop the most appropriate approach for their own research,
- an interactive environment in which individual research topics are presented to and discussed with other participants and the lecturers,
- the opportunity to get to know and learn from other researchers and develop long-term collaborations.

To achieve the objectives, participants are actively engaged in the Summer School: the emphasis is on discussions and exercises based around the research projects of the participants.

## Prerequisites

The Summer School is suitable for PhD students who have decided on a research topic, have undertaken a literature study, have formulated first aims and objectives and have an initial plan of work. For a three-year PhD, this will normally be at the end of the first year; for a four- or five-year PhD, at the end of the second year.

## Conditions of Participation

- The course language is **English**.
- The number of participants is limited to max. 20. Therefore, you have to **apply for participation**.
- In case of over-subscription the course organisers will select, based on the criteria stated in the prerequisites; in addition the number of participants of a single university may be limited.
- **Participants will have to attend both weeks.**

## Dates and Venues (travel details for both locations will follow)

Week 1: Arrival Monday (!), June 12<sup>th</sup>, 2017, afternoon; departure Saturday, June 17<sup>th</sup>, 2017, early afternoon (optional Sunday, June 18<sup>th</sup>, 2017)

Location: Seminar- und Ferienhaus “Zur Talsperre”, Heyda (near Ilmenau), Germany;  
<http://www.talsperre-heyda.de/>

Week 2: Arrival Sunday, July 16<sup>th</sup>, 2017, afternoon; departure Saturday July 22<sup>nd</sup>, 2017, morning

Location: Magleås Kursuscenter, Birkerød (north of Copenhagen), Denmark; <http://www.magleaas.dk/>

**If you are non-European, please check whether you need a visa for Germany and/or Denmark!**

## Fee

The total fee including full-board accommodation is **1,125 Euro**. This includes the following for *both* weeks: accommodation (from Monday to Saturday in week 1, from Sunday to Saturday in week 2), all meals during the stay from the supper on the day of arrival to the breakfast on the day of departure, refreshments during the breaks, paper hand-outs, background material (provided via Dropbox), and the book “DRM, a Design Research Methodology”. Only the costs of travelling and insurance are not included.

## Programme

**Week 1:** Introduction of participants through presentation of their projects; the nature of design and design research; concepts, models and schools of design and designing; Design Research Methodology (DRM) and examples of its use; defining aim, context, phenomenon of own project; identifying areas of relevance and own contribution; systematic literature review and gap analysis; formulation of research questions/hypotheses for own project; establishing reference models; research types.

**Week 2:** Descriptive design research (data collection & analysis, interpretation, drawing conclusions); relating data collection methods to research questions/hypotheses; the nature and use of theories in design; prescriptive phase of design research – developing knowledge, methods, models, tools; visualising main research object(s) of own project; evaluating research results; writing a thesis or other publication; reviewing articles.

All issues are treated using a mix of lectures, discussions, exercises (applied to own project) and presentations of results. Results of discussion and exercises are minuted and distributed to all participants.

## Application

To apply, please send an email **before March 31<sup>st</sup>, 2017**, to all three course leaders (see below). The application should contain:

- Your research topic (introduction to the problem to be solved, expected outcome, references)
- The progress you have made thus far (literature study, research questions, initial model, etc.)
- Your affiliation and the PhD-supervisor
- The date on which you started your PhD, the year when you plan to finish

You will be notified by email **before April 18<sup>th</sup>, 2017**, about your acceptance. After that we will send further details about payment, travel, etc.

## Certificate of Participation

All participants will be registered at the Technical University of Denmark, from which they receive an official certificate. The course leads to 5 ECTS points. Whether or not these points are recognised depends on each participant's university and PhD program.

## Preparation and Homework

### Preparation for Week 1:

- Participants are asked to prepare a **one-page (A4) written introduction** to their work containing:
  - Your research topic
  - Introduction to the problem to be solved
  - Objectives
  - Main research question(s)
  - Outline plan
  - Expected outcome
  - Your name and a picture of yourself

This introduction is to be uploaded to the website [www.ssedr.org](http://www.ssedr.org) and/or emailed to all participants and lecturers **by June 7<sup>th</sup>, 2017**. (The user-ID and password to access this website for download and upload will be announced to accepted participants.) All participants are expected to download and read all introductions prior to the Summer School and to bring copies of them (a binder will be provided by us).

- You are expected to give a presentation of your work on the first day of the Summer School. We ask you to attend to the following:
  - Prepare not more than three slides!
  - Limit your presentation to 5-7 minutes to allow for questions (we will only have 15 minutes in total to understand the project and clarify questions).
  - We will use the Dropbox mechanism to transfer your presentation (there will be one computer for all presentations that are to be held during the Summer School). Further information will follow.
  - Just in case: Please also prepare a memory stick with your presentation, so that we can quickly load your file onto the Summer School computer if Dropbox does not work.
  - Include your name into the file name.

**Preparation for Week 2:**

- Please prepare a short presentation (“elevator pitch” style; 3-5 min each) explaining:
  - One slide about the research project as a reminder
  - One slide on lessons learned or changes made since week 1
- Please prepare a poster (A2 format). This exercise is on how to transport your project to the (scientific) public (e.g. at a conference). One possible structure of the poster is (don’t necessarily stick to it – be creative!):
  - Background/problem statement
  - Goal and research questions/hypotheses and their relationships
  - What is your focus
  - Own contribution
  - Research approach (why do you believe there will be a result?)
  - Expected results
  - Your name and a picture of yourself

The poster has to be uploaded to the website [www.ssedr.org](http://www.ssedr.org) at the latest by July 12<sup>th</sup>, 2017.

All participants are expected to:

- Bring their own poster on A2 to week 2 of the Summer School
- Download all posters from the website
- Look at them (content, message, form)
- Bring a copy of all posters to week 2 of the Summer School

**Final report:**

- Within six weeks after the course, the participants are requested to write a short report reflecting on the course and on the effects of the course on their own research.

**Hosts**

Week 1: Prof. Dr.-Ing. Christian Weber, Technische Universität Ilmenau, Department of Mechanical Engineering, Engineering Design Group

Week 2: Prof. Dr. Niels Henrik Mortensen, Technical University of Denmark, Department of Mechanical Engineering, Head of Section of Engineering Design and Product Development

**Course Leaders, Contacts**

- Prof. Dr.-Ing. Lucienne Blessing, Singapore University of Technology and Design (SUTD), SUTD-MIT International Design Centre (IDC); [lucienne\\_blessing@sutd.edu.sg](mailto:lucienne_blessing@sutd.edu.sg)
- Prof. Dr.-Ing. Christian Weber, Technische Universität Ilmenau, Germany, Department of Mechanical Engineering, Engineering Design Group; [christian.weber@tu-ilmenau.de](mailto:christian.weber@tu-ilmenau.de)
- Dr. Daniela Pigosso, Technical University of Denmark (DTU), Department of Mechanical Engineering, Section of Engineering Design and Product Development; [danpi@mek.dtu.dk](mailto:danpi@mek.dtu.dk)

**Support**

Running the Summer School is supported by:



The Summer School is endorsed by:



[www.designsociety.org](http://www.designsociety.org)

Please visit our website [www.ssedr.org](http://www.ssedr.org) for pictures of past events and alumni information.

**See you at SSEDR 2017!**

**Lucienne, Daniela and Christian**