21st SUMMER SCHOOL ON ENGINEERING DESIGN RESEARCH

Week 1: Sun May 26th – Sat June 01st, 2019,   Hotel Lavica, Samobor (nr. Zagreb), Croatia

Week 2: Sun July 28th – Sat August 03rd, 2019,   Kloster Lichtenthal, Baden-Baden, Germany

Deadline for application: Fri March 29th, 2019
Latest notification of acceptance: Fri April 18th, 2019

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 Sunday, May 26th, 2019, afternoon; departure Saturday, June 01st, 2019, morning

Location: Hotel Lavica, Samobor (nr. Zagreb), Croatia; www.lavica-hotel.hr, maps ➔

Week 2:   Arrival Sunday, July 28th, 2019, afternoon; departure Saturday, August 03rd, 2019, morning

Location: Kloster Lichtenthal, Baden-Baden, Germany; www.abtei-lichtenthal.de/, maps ➔

> **Note:** The second week of SSEDR '19 ends on the weekend immediately before the 22nd International Conference on Engineering Design (ICED '19) begins in Delft, the Netherlands (August 5th-8th, 2019). For participants of both SSEDR '19 and ICED '19 it might be an option to go directly from Baden-Baden to Delft – using the excellent train connections from Baden-Baden to Amsterdam or flight connections from Frankfurt, Stuttgart or Basel-Mulhouse airports to Amsterdam.

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

Fee

The total fee including full-board accommodation is **1,200 Euro**. This includes for *both* weeks: accommodation (from Sunday to Saturday in both weeks), all meals during the stay from the supper on the day of arrival (Sunday) to the breakfast on the day of departure (Saturday), 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. The nature and use of theories in design and design research. Design Research Methodology (DRM) and examples of its use. Task clarification phase: Defining aim, context, phenomenon of own project; how to find the research gap; formulation of research questions/hypotheses for own project; establishing reference models; identifying areas of relevance and fitting in own contribution. Research types and placing own project into the research type matrix. Systematic literature review.

Week 2: First descriptive phase of design research: Data collection & analysis, interpretation, drawing conclusions. Relating data collection methods to research questions/hypotheses: Prescriptive phase of design research: How to develop knowledge, methods, models, tools. Visualising main research object(s) of own project. Evaluating own research results (second descriptive phase). Iterative development of the support. How to write a thesis or other publications. Reviewing articles. Poster session and feedback on posters. Your future life after the PhD.

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

Application

To apply, please sign up **before March 29th**, **2019** at the conference management system at:

> https://www.conferencemanagerpro.com/SummerSchool/intro.html

Your 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 (university name and address, PhD supervisor), your date of birth (for the certificate)
- The date on which you started your PhD, the year when you plan to finish

You will be notified by email **before April 18th, 2019**, 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 provided all participants and lecturers **by May 20th, 2019**, using the SSEDR 2019 Dropbox. (All accepted participants will be invited to the Dropbox for uploads and downloads in due time.)

- All participants are expected to download and read all introductions prior to the start of 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 4 minutes to allow for questions (we will only have 8 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:

- Develop a systematic literature review protocol for own project

- Please prepare a short presentation ("elevator pitch" style; 2 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

- Please upload the poster to the SSEDR 2019 Dropbox **at the latest by July 22nd, 2019**.

- All participants are expected to:

    - Bring their own poster on A2 to week 2 of the Summer School for a joint poster session
    - Download all posters
    - Look at them (content, message, form)
    - Bring a copy (A4) of all posters to week 2 of the Summer School

- Read two papers sent by the lecturers and prepare reviews

Final report:

- Within two months (but not earlier than one month) 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. Mario Štorga, PhD. M.E., University of Zagreb, Faculty of Mechanical Engineering and Naval Architecture, Chair of Design and Product Development, Croatia, mario.storga@fsb.hr

Week 2: Prof. Dr.-Ing. Christian Weber, Technische Universität Ilmenau, Germany, Department of Mechanical Engineering, Engineering Design Group, christian.weber@tu-ilmenau.de

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

- Assoc. Prof. Dr. Daniela Pigosso, Technical University of Denmark (DTU), Department of Mech. Engineering, Section of Engineering Design and Product Development, danpi@mek.dtu.dk

- Prof. Dr.-Ing. Christian Weber, Technische Universität Ilmenau, Germany, Dep. of Mechanical Engineering, Engineering Design Group, christian.weber@tu-ilmenau.de

Support

Running the Summer School is supported by:

The Summer School is endorsed by: www.designsociety.org

Please visit our website www.ssedr.org for pictures of past events and alumni information.

See you at SSEDR '19!   Lucienne, Daniela, Christian and Mario

28.01.2019