

**Discipline:** Design Science (cross-domain)

## 1 Language

English

## 2 Title

Design Science

## 3 Lecturer

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## 4 Date and Location

DIGITAL COURSE:

- ONLINE: October 23 – November 3, 2023 - two full days and three half days
- OFFLINE: October 23 – November 3, 2023 – ca. ten days for reading, preparation, decentral group work

## 5 Course Description

### 5.1 Abstract and Learning Objectives

Design Science Research (DSR) is a promising research paradigm that intends to generate knowledge on the design of innovative solutions to real-world problems. As such, DSR is specifically useful in contributing to the solution of societally and practically relevant challenges. At the same time, matured methodological foundations are available today, specifically supporting publishing DSR research both at conferences and top-tier journals.

This course gives an introduction to DSR. It focuses on planning and conducting design science research on Ph.D. level. It is intended to provide state-of-the art methodological competences for all Ph.D. students in business whose research is not solely descriptive/explanatory, but also comprises components where artefacts are purposefully designed and evaluated.

While DSR is very common in Information Systems research, purposeful artefact design and evaluation are found in many other business research fields like, e.g., General Management, Operations Management/Management Science, Accounting/Controlling, Business Education, or Marketing. Although Design Science is often conducted implicitly, the methodological discourse in the Information Systems has led to a high level of reflection and to the availability of a large number of reference publications and cases, so that examples and cases will often originate from this domain. It should however be noted that DSR as a paradigm is applicable and is used in nearly all fields of business research. As a consequence, this class is not only part of the Information Systems ProDok curriculum, but intentionally being positioned as cross-domain class.

The goal of the course is to provide Ph.D. students with insights and capabilities that enable them to plan and conduct independent DSR. To achieve this goal, students will engage in a number of activities in preparation and during this four-day course, including preparatory readings, lectures, presentations, project work, and in-class discussions. The course format offers an interactive learning experience and the unique opportunity to obtain individualized feedback from leading IS researchers as well as develop preliminary research designs for their own Ph.D. projects.

## 5.2 Content

### Offline pre-class preparation:

Preparatory study of essential DSR methodology papers by students. The reading material is divided into

- (1) a package of fundamental papers to be read by all participants:  
<https://www.dropbox.com/sh/x5uvyi4a9e04w2s/AAAAXGN5EYant9gg06EHyhwma?dl=0>
- (2) four or five (depending on the number of participants) packages with together 16 to 20 papers where each participant has to choose one paper and presents it in ten minutes in class:  
<https://www.dropbox.com/sh/s18flh3fh54rj39/AABThFpLl7PR5T-aqZmUtFwJa?dl=0>

The four or five paper packages cover general methodology papers, papers focusing on specific artefact types, papers focusing on specific DSR project phases, papers focusing on design theorizing, and exemplary DSR studies.

### Online course components:

The online course comprises of the following components:

- (1) **Introduction:** Introduction to the course and introduction to DSR by the lecturers.
- (2) **Panels:** Presentation of reading assignments by students, discussion of methodological insights and implications.
- (3) **Coaching:** Faculty-coached definition of group design projects, design of research plans, presentation and discussion of research plans. Depending on the maturity level of Ph.D. students dissertation projects, design projects could be based on a design component of their dissertation or a specific sub-project/paper of their dissertation. The topic can be freely chosen by the group. Groups are created built based on a 'design project marketplace' on the end of the first course day.

Between the in-class online components, group design projects are developed and extended / revised offline in the form of self-organized group work.

### 5.3 Schedule / Course format

**Before day 1:** Self-organized course preparation assignments (reading, presentation, project idea).

**Day 1** (October 23): Introduction, reading assignments and project marketplace

08:30 – 09:15 Welcome session / participant introductions

09:30 – 10:15 Introduction to DSR by lecturers (1)

10:30 – 11:15 Introduction to DSR by lecturers (2)

11:30 – 12:15 Introduction to DSR by lecturers (3)

Lunch Break

13:30 – 14:30 Reading assignment panel (package 1): 4 papers plus discussion

14:45 – 15:45 Reading assignment panel (package 2): 4 papers plus discussion

16:00 – 17:00 Reading assignment panel (package 3): 4 papers plus discussion

17:15 – 18:15 Cases market place (forming of 5 groups)

**Between day 1 and day 2:** self-organized group work

**Day 2** (October 25):

Reading assignments (continued)

09:00 – 10:00 Reading assignment panel (package 4): 4 papers plus discussion

10:15 – 11:15 Reading assignment panel (package 5 or open discussion)

Lunch Break

1st walk through (15 + 30 minutes each group)

13:00 – 13:45 Cases discussion and feedback (group 1)

14:00 – 14:45 Cases discussion and feedback (group 2)

15:00 – 15:45 Cases discussion and feedback (group 3)

16:00 – 16:45 Cases discussion and feedback (group 4)

17:00 – 17:45 Cases discussion and feedback (group 5)

**Between day 2 and day 3:** self-organized group work

**Day 3** (October 30): Reading assignment and 2nd walk through (15 + 30 minutes each group)

Lunch Break

13:00 – 13:45 Cases discussion and feedback (group 1)

14:00 – 14:45 Cases discussion and feedback (group 2)

15:00 – 15:45 Cases discussion and feedback (group 3)

16:00 – 16:45 Cases discussion and feedback (group 4)

17:00 – 17:45 Cases discussion and feedback (group 5)

**Between day 3 and day 4:** self-organized group work

**Day 4** (November 1): 3rd walk through (15 + 15 minutes each group)

08:30 – 09:30 Cases discussion and feedback (groups 1 and 2)

09:45 – 10:45 Cases discussion and feedback (groups 3 and 4)

11:00 – 11:30 Case discussion and feedback (group 5)

**Between day 4 and day 5:** self-organized group work

**Day 5** (November 3): Final presentations and closing (20 + 10 minutes each group)

14:00 – 15:00 Cases discussion and feedback (groups 1 and 2)

15:15 – 16:15 Cases discussion and feedback (groups 3 and 4)

16:30 – 17:00 Case discussion and feedback (group 5)

17:15 – 18:00 Debriefing, Closing, Follow ups

## 6 Preparation and Literature

### 6.1 Prerequisites

The course is intended for Ph.D. students in all business / management disciplines whose dissertation project includes to purposefully design and evaluate an artefact – such as a conceptual model, a taxonomy/classification, a procedure/process, metrics, an information model, guidelines/principles, a reference architecture, a concrete product/software prototype, etc.

Students should have a preliminary idea about their design research problem and their research questions, about who the stakeholders of their artefact(s) are and what requirements they have, and about their sources of data.

### 6.2 Essential or Recommended Reading Material

The reading material is divided into

- (1) a package of fundamental papers to be read by all participants:

<https://www.dropbox.com/sh/x5uvyj4a9e04w2s/AAAAXGN5EYant9gg06EHyhwma?dl=0>

- (2) four or five (depending on the number of participants) packages with together 16 to 20 papers where each participant has to choose one paper and presents it in ten minutes in class:

<https://www.dropbox.com/sh/s18flh3fh54rj39/AABThFpLl7PR5T-aqZmUtFwJa?dl=0>

The four or five paper packages cover general methodology papers, papers focusing on specific artefact types, papers focusing on specific DSR project phases, papers focusing on design theorizing, and exemplary DSR studies.

### 6.3 To prepare

Each student is expected to read all papers in the fundamental paper package (1), to choose one paper from the 4 or 5 methodological paper packages (2) and to present it in ten minutes in class. Each student is asked to develop an idea for a group design project for the project marketplace discussion.

Each student is expected to actively elaborate a design research mini-project according to certain presented criteria in a self-organized group. For this design project, several walkthroughs (15-20 minute presentations, 10-20 minute feedbacks) and a final presentation need to be prepared.

All students need to participate in all classroom discussions. Good participation includes asking insightful questions, raising original ideas, and making constructive comments.

## 7 Administration

### 7.1 Max. number of participants

Due to the interactive character and Ph.D. project work, not more than 18 students should attend. The ideal class size is 16 students.

### 7.2 Assignments

See section 6.3

### 7.3 Exam

If grading is requested by a participant, grading will be based on

- performance of reading assignment presentation (25%)
- performance of design project (75%)
- active participation in class

Upon successful participation, an individual certification with or without grades (depending on the formal requirements of the student's study administration) will be produced by VHB.

### 7.4 Credits

The class will create an estimated overall workload of 150-180 hours, corresponding to 6 ECTS.

## 8 Working hours

Working Hours	Hours
Preparatory assignments (general reading, specific reading assignment & preparation of presentation)	100
Participation in class	30
Preparation for final presentation topics	15
Group & individual work for final presentation	35
<b>Total</b>	<b>180 h</b>