SDU
University of Southern Denmark

AALBORG UNIVERSITY



Research Methods for Designing, Implementing and Evaluating Digital Health Interventions

TRDN PhD Course 2027

17-20 AUGUST 2027

University of Southern Denmark,
Odense, Denmark

Course objective

The health care systems in Europe and the US are challenged by demographic changes with an increasing number of elderly citizens with chronic disease and a substantial staff shortage in both primary and secondary care. Therefore, governments and health care institutions are focusing on digital technologies and moving hospital services to the patient's home.

On this basis, the aim of our 2027 PhD course is to give the students an understanding of research methods used in the transformation of brick-and-mortar hospital-based services into home care, home monitoring, and Hospital@Home through digital health technologies and organizational change. In addition, the course will introduce research methods used to study AI, clinical robotics and other digital health technologies.

Thus, PhD students will gain knowledge of relevant research methods, including their strengths and limitations, for studying the design, implementation, and effects of digital health technologies and associated organizational development. During the course the students will examine the possibilities for using the methods in their own PhD project.

The course focuses on interdisciplinary research methods, involvement of patients, relatives and health care professionals in design of new digital services, organizational challenges, assessment of effectiveness of technologies and have an interdisciplinary faculty and students from medicine, psychiatry, nursing, health policy, health economics, engineering, etc.

The course is relevant for PhD students with interest in research in design, implementation and assessment of home care, home monitoring, and Hospital@Home through digital health technologies and organizational change, AI and clinical robots.

Odense University Hospital is leading in European research and practical use of digital health technologies. During all days, clinicians from the hospital will participate and present examples of the use of digital health technologies in clinical practice. In addition, all days will involve group work, and students will give a presentation on the last day of the course and present their use of the scientific disciplines described during the course in their own research project.

The course is organized in collaboration with Transatlantic Digital Health Network (TDRN) and involves researchers from Danish and US universities including UC Berkeley and UC Davis.

Learning objectives

At the end of the course, students should be able to:

- Understand research methods used in transformation of brick-and-mortar hospital-based services into home care, home monitoring, and Hospital@Home through digital health technologies and organizational change.
- Understand research methods used to study clinical AI, clinical robotics and other digital health technologies.
- Understand strengths and weaknesses of research methods used for design, implementation and evaluation of the effects of digital health technologies, including arguments for involvement of patients and health care professionals in research, arguments for selection of implementation methods, typical barriers and facilitators in implementation of Hospital@Home, and arguments for selection of outcome measures etc. in evaluation.
- Select and apply relevant research methods for design, implementation or evaluation of effects of digital health technologies for their own thesis project.

Faculty

- Professor Kristian Kidholm, CIMT, SDU, Denmark
- Professor Birthe Dinesen, Laboratory for Digital Health, Neural Engineering and Neurophysiology, AAU, Denmark
- Professor Jane Clemensen, CIMT, SDU, Denmark
- Professor Nick Anderson, University of California, Davis, USA
- Professor Kathy Kim, Managing director, UC Berkeley CITRIS Health
- Associate professor Helle Spindler, Department of Psychology, Aarhus University, Denmark

Invited speakers

- Professor James Marcin, Director at Center for Health and Technology, UC Davis Health, USA
- Professor Anthony Smith, Director at Centre for Online Health, University of Queensland, Australia
- Professor Karen Andersen-Ranberg, Geriatrics, SDU, Denmark
- Associate professor Thomas Lund, CIMT, Hematology, Denmark
- Associate professor Kristina Garne Holm, SDU, Denmark
- Assistent professor Maja Kjær Poulsen, CIMT, SDU, Denmark
- PhD student, MD, Kristian Bach Laursen-Kidholm

Program at glance

TUESDAY 17 AUGUST

Theme: Introduction, patient involvement and complex interventions

- Patient involvement in design processes and the Participatory Design proces
- Framework for design, implementation and evaluation of complex interventions
- Case study no 1. from a clinical department: Home monitoring of premature infants

Social program: Dinner at Storms Warehouse (self-paid)

WEDNESDAY 18 AUGUST

Theme: Research methods in organizational change and implementation

- Using implementation science to manage organizational barriers and facilitators
- Change management and staff involvement
- Organizational challenges, barriers and facilitators in implementation of Hospital@Home in public health systems and private hospitals
- Case study no 2. from a clinical department: The Influenzer project

Social program: Barbeque at The Forest Lake (Skovsøen) (included)

THURSDAY 19 AUGUST

Theme: Multidisciplinary assessment of the impact of digital health technologies

- Assessment of clinical outcomes and safety
- Assessment of patient perception and acceptability
- Health economic evaluation – societal cost-effectiveness analysis VS budget impact
- Choosing the relevant research design for effectiveness studies: Real world studies or RCTs?
- Case study no 3. from a clinical department: Home care in hematology

Social program: Dinner at Café Deilig, HC Andersens Garden (self-paid)

FRIDAY 20 AUGUST

Theme: Discussion of use of the research methods in the students PhD projects

- Student presentations and peer feedback
- How to be successful in getting your manuscript accepted for publication?
- Using social media for dissemination of your studies
- Innovation and entrepreneurship: Is a startup the next step for you?
- Course evaluation

Social program

Tuesday 17 AUGUST

Dinner at Storms Warehouse (self-paid)



WEDNESDAY 18 AUGUST



THURSDAY 19 AUGUST

Dinner at Café Deilig, HC Andersens Garden (self-paid)



Good to know

Course location

University of Southern Denmark, Campusvej 55, 5250 Odense M,

Room: Cambridge

SDU Maps

Workload

Teaching will take place from 8.30 to 16.30 every day.

Students need to read the syllabus before the course and prepare a three-page presentation of their project. Students will receive feedback from the faculty during the course, and students must prepare a presentation of their use of methods described during the course in their project.

• Preparation - reading	56 hours
• Preparation - producing a three page presentation of their project	14 hours
• Seminar lectures	28 hours
• Presentations made during the course	14 hours
• Total	112 (4 ECTS)

Registration

Register here: PhD courses in Denmark

Deadline for registration: June 10, 2027

Course fee

The course is free for PhD students from Danish Universities and PhD students at Nordic Universities covered by the Open Market agreement.

The course is open for PhD students from other universities at a fee of 2.500 DKK, € 335 or $ 380.

Coffee and lunch will be served during the course. Travel and accommodation is arranged by the PhD students and not part of the fee.

Questions about the TTRN PhD course

Direct your question at kristian.kidholm@rsyd.dk