



## Research methods in digital health technology

### - TTRN PhD Course at Odense University Hospital

2024, August 12-16

#### Course objective

The aim of the PhD course is to give a comprehensive introduction to research methods used in the different phases of the innovation process for digital health technologies such as telehealth, home monitoring, mHealth, video consultation, artificial intelligence (AI), clinical robots, etc.

Thus, PhD students will during the course learn about relevant research methods and their strengths and weaknesses in the design, assessment and implementation of digital health technologies. During the course the students will examine the possibilities for using the methods in their own PhD project.

The course focus on interdisciplinary research methods, assessment of the societal value of technologies, patient involvement, organizational challenges and have an interdisciplinary faculty and students from medicine, nursing, health policy, engineering, etc.

The course is relevant for PhD-students with interest in research in design, assessment and implementation of digital health technologies, including telemedicine, home monitoring, AI and clinical robots. Senior researchers with interest in these areas are also welcome.

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 the clinical practise. In addition, all days will involve group work and students will give a presentation at 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 TTRN – Transatlantic Telemedicine Research Network (<https://health.citris-uc.org/programs/transatlantic-telehealth-research-network-ttrn/>) and involves researchers from Danish and US universities including UC Berkeley, UC Davis and Cleveland Clinic.

## Course Chairs

Kristian Kidholm, Professor, PhD, CIMT – Center for Innovative Medical Technology, Clinical Institute, Odense University Hospital and University of Southern Denmark, DK



Birthe Dinesen, Professor, Laboratory for Welfare Technologies – Digital Health & Rehabilitation, Sport Sciences -Performance and Technology, Department of Health Science and Technology, Aalborg University (AAU), DK



Nancy M. Albert, PhD, CCNS, CHFN, CCRN, NE-BC, FAHA, FCCM, FHFSA, FAAN, Associate Chief Nursing Officer - Research and Innovation- Zelony Nursing Institute, Clinical Nurse Specialist, Heart, Vascular & Thoracic Institute, Cleveland Clinic USA



Mette Rothmann, associate professor at steno Diabetes Center Odense, Center for Innovative Medical Technology, Odense University Hospital, University of Southern Denmark, DK



Nick Anderson, Cardiff Professor of Biomedical Informatics, Chief, Division of Health Informatics, Department of Public Health Sciences, School of Medicine, Chair, Health Informatics Graduate Group, UC Davis, USA



## Faculty

- Professor Kristian Kidholm, PhD, CIMT, SDU, Denmark
- Professor Birthe Dinesen, PhD, AAU, Denmark
- Associate professor Mette Rothmann, PhD, CIMT, SDU, Denmark
- Associate professor Nancy Albert, PhD, CCNS, FAAN, Cleveland Clinic Main Campus, USA
- Professor Nick Anderson, PhD, MS, University of California, Davis, USA
- Associate professor Helle Spindler, PhD, Aarhus University, Aarhus, Denmark
- Associate professor Knud Yderstræde, CIMT, SDU, Denmark
- Professor Christopher Beier, CIMT, SDU, Denmark
- Professor Jane Clemensen, CIMT, SDU, Denmark
- Professor Thea Kølsten Fischer, KU, Denmark
- Associate professor Marianne Harbo, SDU
- Associate professor Benjamin Rasmussen, CAIX, SDU, Denmark
- Associate professor Kristina Garne Holm, SDU, Denmark
- Professor Thiusius R. Savarimuthu, CCR, SDU

## Case presentations by:

- PhD student Ann Sophia Bertelsen, SDU, Denmark
- PhD student Maja Kjær Rasmussen, SDU, Denmark
- PhD student Anders Ørsted, SDU, Denmark
- PhD student Minne Line Mikkelsen, CIMT, SDU, Denmark
- PhD student Ann Sophia Bertelsen, SDU, Denmark

**Program at glance (DRAFT)**

<b>Monday</b>	<p><b>Theme: Introduction and overview of phases in the innovation process</b></p> <ul style="list-style-type: none"> <li>- Program overview</li> <li>- Ignite Talks</li> <li>- Steps in the innovation process</li> <li>- Introduction to central digital health technologies in the course:             <ul style="list-style-type: none"> <li>- Telemedicine and digital health technology,</li> <li>- Clinical Robots</li> <li>- Clinical AI</li> </ul> </li> <li>- Clinical visit number one: Assessment of robot for mobilization of hospitalized patients</li> <li>- Dinner at STORMS PAKHUS</li> </ul>
<b>Tuesday</b>	<p><b>Theme: Research methods in the design of digital health technologies</b></p> <ul style="list-style-type: none"> <li>- Participatory design</li> <li>- Patient involvement</li> <li>- Panel of patient: Discussion with patients about co-production and participation in research</li> <li>- Clinical visit number two: Home monitoring of premature infants</li> <li>- Boat tour at Odense Å and dinner at Carlslund Resturant</li> </ul>
<b>Wednesday</b>	<p><b>Theme: Multidisciplinary assessment of the impact of digital health technologies:</b></p> <ul style="list-style-type: none"> <li>- Assessment of clinical outcomes and safety</li> <li>- Assessment of patient perception and acceptability</li> <li>- Health economic evaluation</li> <li>- Ethical aspects</li> <li>- Research designs and selection of outcome measures</li> <li>- Clinical visit number three: Diagnostics of sleep disorder based on PRO data</li> </ul>
<b>Thursday</b>	<p><b>Theme: Research methods in implementation</b></p> <ul style="list-style-type: none"> <li>- Implementation science</li> <li>- Digital Transformation</li> <li>- Barriers and facilitators</li> <li>- Staff involvement</li> <li>- Clinical visit number four: Digital pathology</li> <li>- Train ride to Svendborg and dinner at Kristians place at the sea-side balcony</li> </ul>
<b>Friday</b>	<p><b>Theme: Discussion of use of the research methods in the students Ph.D. projects</b></p> <ul style="list-style-type: none"> <li>- Presentation of learning from Ph.D. projects and peer feedback</li> <li>- Legal and regulatory challenges to health innovation in practice</li> <li>- The value of international collaboration</li> <li>- Reception</li> </ul>

**Social program!**

- **Monday - Dinner August 12 at STORMS PAKHUS (self paid)**



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- **Tuesday – Boat tour at the local river, Odense Å and dinner at Carlslund Resturant (included)**



- **Thursday - Train ride to Svendborg and dinner at Kristians place at the sea-side balcony (included)**





**OUI**  
**Odense University Hospital**  
**Svendborg Hospital**

**Course location:** Odense University Hospital, Klørvænget 6, 5000 Odense C, lokale 4

<https://www.google.com/maps/place/Kl%C3%B8rv%C3%A6nget+6,+5000+Odense/@55.3824046,10.3672072,17z/data=!3m1!4b1!4m6!3m5!1s0x464cdf8d7697053d:0xcd061ce1cc93a5!8m2!3d55.3824016!4d10.3697821!16s%2Fg%2F11c2g4p1kd?entry=ttu>

### **Student tasks and ECTS**

Teaching will take place at 9.00 to 16.30 all days.

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 PhD project.

ECTS points in total: 4

### **Registration:**

[https://www.sdu.dk/en/forskning/phd/phd\\_skoler/phdskolensundhedsvidenskab/phd\\_courses/upcoming\\_courses/external-courses](https://www.sdu.dk/en/forskning/phd/phd_skoler/phdskolensundhedsvidenskab/phd_courses/upcoming_courses/external-courses)

### **Deadline for registration:**

Deadline is June 10, 2024

### **Course fee**

The course is free is 3.800 DKR, € 510 or \$ 550.

### **Questions to the TTRN PhD course**

Email [kristian.kidholm@rsyd.dk](mailto:kristian.kidholm@rsyd.dk)