



## DEPARTMENT OF NEUROBIOLOGY, CARE SCIENCES AND SOCIETY

### **H1F2693, Measuring Physical Activity with Focus in Wearable Monitors - Applications for Clinical and Epidemiological Studies, 3 credits (hec)**

Bedömning av fysisk aktivitet med tonvikt på rörelsemätning - tillämpning inom klinisk och epidemiologisk forskning, 3 högskolepoäng

*Third-cycle level / Forskarnivå*

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#### **Approval**

This syllabus was approved by the The Committee for Doctoral Education on 2024-02-06, and was last revised on 2025-02-14. The revised course syllabus is valid from spring semester 2025.

#### ***Responsible department***

Department of Neurobiology, Care Sciences and Society, Faculty of Medicine

#### **Prerequisite courses, or equivalent**

No prerequisite courses, or equivalent, demanded for this course.

#### **Purpose & Intended learning outcomes**

##### **Purpose**

The primary objective of the course is to promote high quality research in clinical and epidemiological studies through understanding of principles for measuring physical activity and methods for analyzing physical activity data. The course has the primary focus on measurement of physical activity using accelerometry and its use in different study designs. An overview of other methods to measure physical activity such as questionnaires, heart rate monitoring or a combination of different physiological measures will also be covered.

##### **Intended learning outcomes**

By the end of the course the student should be able to:

1. Reflect on the concepts relevant for the relation between physical activity and health and understand measurement principles for assessing different domains of physical activity and

especially the principles of wearable monitors such as accelerometry.

2. Choose and justify the best method of choice for assessment of physical activity in accordance with different research questions, study designs and populations.
3. Discuss how the validity (measurement error) of the wearable sensor can influence the results in clinical and/or epidemiological studies in different populations.
4. Analyse physical activity data and interpret the outcomes in accordance with different research questions, study designs and populations.

## Course content

- Assessment of physical activity using questionnaires and wearable monitors in different types of studies
- Sensor development and measurement principles
- Validation and measurement bias
- Different approaches handling and analyzing the data and outcomes
- Statistical considerations
- Interpretation of results

## Forms of teaching and learning

This fully online course is a mix of distance learning with online interactive lectures, demonstrations, workshops, quiz and seminars to promote a reflective, analytical and critical approach towards this research field. Students will be encouraged to be interactive in workshops and seminars. There will be hands-on experience with students wearing accelerometer throughout a week and opportunities for exploring, processing and analysis of data.

### *Language of instruction*

The course is given in English

## Grading scale

Pass (G) /Fail (U)

## Compulsory components & forms of assessment

### Compulsory components

The participants are expected to participate in all course sessions. Absence will be compensated with a written assignment in agreement with the course director.

### Forms of assessment

The learning outcomes will be examined by a written assignment where the students apply the course content to their own doctoral projects. The written assignments will be presented and discussed in a seminar where the students are respondents and opponents on each other's work. After the seminar the students will be given one week to refine their work based on the feedback they are given.

## Course literature

Recommended literature:

Paul Innerd. Physical Activity Assessment: A Lifecourse Approach. Routledge. 2019 ISBN: 9781138059993

Relevant scientific articles.