# CM2012 Medical Technologies in Digital Healthcare Transformation 7.5 credits

Medicinsk teknik i Digital transformation inom hälso- och sjukvården

This is a translation of the Swedish, legally binding, course syllabus.

## Establishment

Course syllabus for CM2012 valid from Autumn 2023

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

Medical Engineering, Technology and Health

## Specific prerequisites

B.Sc. degree in engineering or medical science (e.g. medical science or technology, engineering, applied physics, industrial management, entrepreneurship) or similar. Relevant documented Engineering or at least one year work experience. Swedish 3 and English B/English 6.

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# Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

# Intended learning outcomes

The student, after the completion of the course, should be able to:

·       Motivate the need for transformation in the current healthcare system.

·       Demonstrate a basic understanding of the role of digitalization in such transformation process.

·       Recognize the impact of medical technologies in digital health transformation

·       Demonstrate a solid understanding of data-driven methods for improvement at the hospital

·       Critically identify the opportunities and barriers for adoption of digital tools in a care environment

# Course contents

The course provides with fundamental knowledge about drivers of healthcare transformation, methods and technologies in digital transformation of healthcare. The course offers an important preparation of students for taking a role in the digital health transformation. Course content includes the following:

Healthcare Transformation

•Precision Medicine

•Patient Centredness and Patient Engagement

•Evidence-Based Medicine,

•Patient safety

•High-Value Care

•Triple and Quadruple Aim of Healthcare

Digitalization of Healthcare

•Health Data and Health Data Management

•PROMs and PREMs

•Lean and Six-sigma in healthcare

•Security, Privacy and GDPR

•Interoperability in Digital Healthcare

•Ethics in Digital Health

Tools and Methods

•Business Intelligence

•Process-oriented Data Science

•Machine Learning and Data Visualization tools

•Social Media, challenges and Opportunities

•Usability and User Experience

Medical Technology

•Fundamental of medical technology and digital health regulations

•Connected Medical Devices

•Real-Time Locations Systems

•Telemedicine, eHealth and mHealth

•Wearable technologies and consumer level health device

# Examination

- RED1 - Assignments, 2.0 credits, grading scale: P, F
- PRO1 - Project work, 2.0 credits, grading scale: P, F
- TEN1 - Written exam, 3.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Final grade, grade scale A-F.
The exam (A-F) determines the final grade for the course when all course parts have been passed. The examination form and grading criteria will be specified in a course-PM.

# Other requirements for final grade

Approved assignments and quizzes, oral and written presentation of project work and final written exam. Attendance is mandatory in 70% of lectures.

# Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.