

# MASTER'S DISSERTATION AT ENGINEERING ACOUSTICS

DEPARTMENT OF CONSTRUCTION SCIENCES | FACULTY OF ENGINEERING | LUND UNIVERSITY



MIA LINDROS

## PRESENTATION

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## REPORT

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**THE WORK IS PERFORMED AT  
AND IN COOPERATION WITH  
ÅF LJUD OCH VIBRATIONER,  
MALMÖ**

## ACOUSTIC LANDSCAPE IN HOSPITALS

### SHORT BACKGROUND

Our hospitals today are full of sound that is perceived as annoying and disruptive. Sound is generated from machines, alarms, ventilation systems and people in constant movement. Surfaces that often is hard also contribute to the problem. This affects patients, visitors and health professionals. A noisy and stressed environment can prevent our sick and weak patients to recover as they should. Knowledge is needed on how to design and plan our future hospital facilities in order reach the idealistic acoustical environment.

### PURPOSE OF THESIS

The purpose of the thesis is to provide a deeper insight in why acoustics matters in healthcare environments. The thesis will establish how an optimal sound environment can be achieved, this through measurements, modelling and concluding evaluations. A method of how to design and plan rooms in healthcare environments will be identified.

### METHOD

The first phase will consist of a literature study of the acoustic environment in hospitals. Health effects on patients, room acoustical parameters and design strategies for an improved acoustic environment will be subject areas of interest, among others.

Measurements of sound pressure level and reverberation time will be done in a patient room of interest. Measurements will be evaluated and analyzed. ODEON software will be used to simulate and further improve the interior acoustics of a patient room. With the geometry and surface-properties, the acoustics can be predicted, listened to, and improved.

Finally, a method of how to design and plan a patient room will be developed and identified. This method will be adjusted according to how ÅF works in the process of room acoustic design.



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