

# Exam evaluation guidelines for FYS3231/4231

## General

For all types of questions, if there are more specific questions after the initial general question, emphasis should be given to both the general question and the more specific questions. This means that a student, who answers the general question but fails to address the specific answers, should not be awarded full score.

## Question about Sensorama

The student should know about the main question(s) (hypotheses) that the project aims to answer. Furthermore, be able to describe briefly the experiments that were carried out and the main results of these. Focus should be given to whether the student has understood the basic concepts of the project. The students work in groups with different responsibilities and it is natural that they have more detailed knowledge about the tasks that they were directly involved with. Since the projects are not always finished before the exam, we do not necessarily demand that the student be able to describe the outcome of the data analyses and the conclusion of the work.

## Question about scientific article

The student should be able to describe briefly how a scientific article is meant to be an objective report from a systematic study. Furthermore, be able to describe the structure of an experimental research article and the process of publication, including the peer review process.

## Question about concepts

Concepts can be things like permittivity, sensor, transducer, dew point, piezo electricity, etc. Focus should be given to comprehension of the concept, rather than a "correct encyclopedia definition".

## Question about a method

A method can be things like calibration procedures for a sensor, the successive approximation method, four-electrode measurements, the lock-in technique, etc. The student should be able both to describe the method and to demonstrate understanding of possible advantages of the method compared to alternative methods (if this is relevant).

## Describe a sensor

A good answer should include a descriptive sketch (if not instructed otherwise) and an explanation of the underlying physical principle of the sensor. The students are often able to choose the specific sensor themselves within a group of sensors (e.g. for measuring a physical parameter). Those who have chosen a particularly simple/banal sensor should not get a full score.

## Calculate transfer function for a circuit

The results can be given as output as a function of input, or as output divided by input. All major steps in the calculations should be demonstrated, so we can understand how the student goes about to solve the problem. Understanding the method is the most important and only minor (if any) reduction in the score should be used for mistakes in the actual mathematical calculations.